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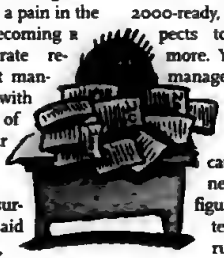
Be careful what you say on Y2K

FLOOD OF SURVEYS TRIGGERS A LEGAL RED ALERT

By Kathleen Melymuka

YEAR 2000 surveys have grown from a nuisance to a pain in the neck. They are becoming a drain on corporate resources as project managers struggle with the implications of putting their year 2000 status in writing.



"I get 10 to 20 surveys a day," said Dennis Grummer, director of the year 2000 project at Sears, Roebuck and Co. in Hoffman Estates, Ill. He has personally filled out 400 surveys from business partners asking whether Sears systems are year 2000-ready, and he said he expects to answer 2,000 more. Year 2000 project managers across the country are being swamped with surveys because business partners are trying to figure out if their systems will be up and running come the millennium.

Handling the sheer volume of surveys is difficult enough,

Y2K, page 100

BOBBY PEABODY

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Fiery antitrust foe and Bob Dole lobby for rivals. Page 3

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Users laud progress of year-old executive team. Page 16

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Microsoft scales back Hydra plans

By Sharon Gaudin and April Jacobs
CHICAGO

MICROSOFT CORP. is putting several of Hydra's key features on the back burner in order to move the product out the door.

Users complained that the concession will make it difficult to implement Windows terminals for logical business applications, such as point-of-sale or manufacturing-floor machines.

At last week's Comdex/Spring '98 here, Microsoft officials told beta testers of the Hydra thin client, now dubbed Windows Terminal Server, to expect limited features in the product's first release. The post-

Hydra, page 101

CA, Tivoli plan focused tools for management

By Patrick Dryden

CORPORATE INFORMATION systems groups may be the winners as Computer Associates International, Inc. and Tivoli Systems, Inc. take their management software rivalry to small business.

Islandia, N.Y.-based CA this week will launch a series of single-function tools that can handle tasks such as software distribution without the overhead of CA's full Unicenter TNG suite. The company also will preview neural network analysis designed to predict problems for human operators.

Meanwhile, Austin, Texas-based Tivoli has rebuilt its TME 10 enterprise management

Focused tools, page 16

Dismantling a Tower of Babel

▸ *Unified warehouse ties electrical parts makers*

By Julia King

YOU CALL IT A dimmer switch. But to players in the $65 billion electrical parts industry, it may go by a dozen different names and identification numbers.

To clarify that confusion, the 40 largest U.S. electrical manufacturers and distributors are building a single, industrywide data warehouse that will let thousands of trading partners electronically exchange consistent product data.

Scheduled to go live early next year, the warehouse is expected to save participating companies millions of dollars by streamlining the industry's helter-skelter information supply chain.

"Up until now, we've shared product information between distributors and manufacturers

Data warehouse, page 14

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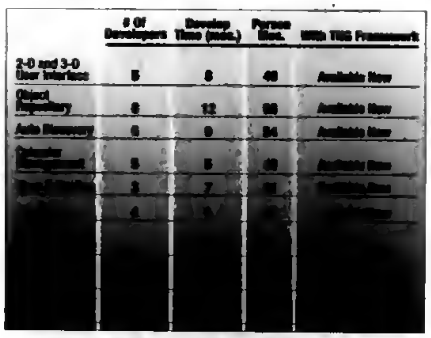
Unicenter TNG is the most open, interoperable and scalable management solution available. It has been supported by virtually every major hardware and software company, including Microsoft, Sun, SAP, Intel, HP, DIGITAL, Tandem, NCR, SGI, and Data General. Peter Kastner from the Aberdeen Group recently summed it up when he said, "Aberdeen positions the Framework as the enterprise management entry-level user choice and *de facto* ISV platform choice."



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UP FRONT

Tobacco road

If you want evidence of what a wondrous publishing medium the Internet has become, just set your browser to *www.house.gov/commerce/TobaccoDocs/documents.html*. There you will find 39,000 pages of material released last week by the House Committee on Commerce and related to the ongoing tobacco case.

For anyone who closely follows the issue of what cigarette makers knew and when, the papers are a gold mine of information. At the site you can find every memo, research paper, note and doodle from the thousands of documents from the 1970s and '80s.

As I trolled through this treasure trove, it struck me how the Internet continues to challenge our basic assumptions about information access. Just five years ago, documents such as these would have been accessible only to a small group of lawyers and legal scholars or anyone who was willing to put up with the ponderous process of filing a Freedom of Information claim. Now a scanner, database and about $5,000 worth of computer hardware accomplishes the same thing.

The Internet continues to challenge our assumptions about information access.

Of course, the authors of the tobacco paper probably don't share my wonder. How could they have anticipated 20 years ago that their chicken-scratch notes from an internal meeting would one day be accessible to millions of people?

Get used to it. Every memo, E-mail and Post-It note you send to someone else may one day end up on a Web page. It's ironic that at a time when most forms of communication are going digital, the technology has blossomed to freely distribute that information to people who were never intended to see it. It's scary. It's exhilarating. It's real.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE

E-Mail Rich Tennant at thewave@tiac.net

NEWS

Bork, Dole join anti-Microsoft camp

By Kim S. Nash

A NEW ANTI-MICROSOFT lobbying group has emerged, and this one includes several companies outside the computer industry. It is fronted by one of Netscape's big-name lobbyists and its new attorney — former senator and presidential candidate Bob Dole and former federal judge and U.S. Supreme Court nominee Robert Bork, respectively.

Former senator Robert Dole and former federal judge Robert Bork, both conservatives, slam Microsoft business practices

Already, given the group's makeup, charges are flying about political posturing obscuring the issues.

The Project to Promote Competition and Innovation in the Digital Age (ProComp), debuted last week with charges that Microsoft Corp. routinely breaks antitrust laws and threatens consumer choice in online commerce.

Major funders include some of the obvious Microsoft rivals, such as Netscape Communications Corp., Oracle Corp. and Sun Microsystems, Inc.

In his books, Bork says government should tread lightly in antitrust cases

But also included are companies from industries Microsoft has only begun to dabble in — and doesn't yet dominate. Those include American Airlines' The Sabre Group, Knight-Ridder New Media, the American Society of Travel Agents and the Air Transport Association, a trade group for airlines.

Washington-based ProComp already has met with some members of Congress and officials at the U.S. Department of Justice, said Mike Pettit, ProComp's executive director.

MATTER OF POLITICS

Critics said ProComp spokesmen Bork and Dole know more about political maneuvers than technology and therefore may not do anything to settle the antitrust dust storm.

"It's enough that it's in the courts. It shouldn't go the political way, too. It looks like it's just going to drag on," said Brian McGuire, director of interactive technologies at Econometrics, Inc., a database marketing firm in Chicago.

The spotlight shone harshest on Bork, known as a conservative, who has written books and court opinions urging the government to tread lightly in antitrust issues. Like Dole, he has been branded a "small government" advocate. Given that background, questions immediately arose about Bork's call for the Justice Department to bring a broad antitrust case against Microsoft.

But Bork's reputation as a serious antitrust scholar could help ProComp's cause significantly, said Rich Gray, an antitrust lawyer at Bergeson, Eliopoulos, Grady and Gray LLP in San Jose, Calif.

"A man of that intellectual honesty is not going to craft his opinions to get a client" for political reasons, Gray said.

NO CONTRADICTION

Bork, meanwhile, maintained that Microsoft's business tactics demand government intervention. And that stand doesn't contradict his earlier opinions, he said, because in his view, Microsoft clearly violates antitrust laws. The vendor uses "predatory practices . . . to disadvantage its rivals," Bork said at a press conference last week.

For example, through its control of the PC interface, Microsoft can direct users to its own World Wide Web sites for airline reservations, entertainment listings and other services. Consumers "are deprived of fair choice," Bork said. And some nervous players in those industries have banded together under ProComp in hopes of achieving a pre-emptive strike.

Bork didn't recommend specific remedies. He said he has yet to fully study the issues.

A Microsoft spokeswoman said it was surprising that Bork and Dole have jumped in on a campaign to coax the government to intercede in Microsoft's business. "They have been very anti-government regulation," she said. Since last October, when the Justice Department filed a narrow complaint about Microsoft bundling the Internet Explorer browser with Windows 95, many companies outside the software industry have said that they fear Microsoft may infringe on their markets. □

Senior editor Sharon Gaudin contributed to this report.

70 bank mergers ... Austin Adams how to stay organized when combining tech groups. **Corporate Strategies, page 41**

The ... landscape is marked by peaks and valleys. **Regional Scope, page 86**

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Java critics: Sun's reorg falls short

By Carol Sliwa and Sharon Gaudin

SUN MICROSYSTEMS, INC. last week scrapped its five largely autonomous operating companies in favor of seven business divisions, including a new one that will cater to Java technologies for consumer devices and embedded systems.

In a statement, Sun said it hoped to accelerate the company's time to market and product development processes and improve operational efficiencies. Sun wanted to "present a unified face to the customer," a spokeswoman said.

However, the reorganization of Sun's JavaSoft subsidiary didn't go quite as far as some Java watchers had hoped in terms of separating its moneymaking product arm from its standards-focused technology side.

> The most important thing Sun can do is be a preacher
> – Jonathan Fornaci
> Ibis Consulting

The overhaul leaves the Alan Baratz-led Java division in charge of desktop software, development tools and Java architecture. The Baratz group also will shepherd Java standardization efforts in all areas, including embedded systems, according to the Sun spokeswoman.

MORE SEPARATION NEEDED

Evan Quinn, an analyst at International Data Corp. in Framingham, Mass., said Sun made a big mistake in not completely separating the Java standards effort from the Java moneymaking effort.

"If Sun's senior management contends that their licensees and suppliers are not threatened or bothered by the fact that JavaSoft is the same unit producing the product and the standard, then they are not listening closely enough," he said.

Some users are more concerned with the bigger picture.

"They better keep an eye on Java," said Jim Lisiak, a technology planner at Chevron Information Technology Co. in San Ramon, Calif. "It could easily end up with all these different flavors — just like what happened to Unix."

Microsoft Corp. has long been a thorn in JavaSoft's side. But the industry got another scare earlier this month when Hewlett-Packard Co. launched its own virtual machine — particularly when Microsoft immediately signed up to license the technology.

"The most important thing Sun can do is be a preacher," said Jonathan Fornaci, CEO of Ibis Consulting, Inc., a Java developer in San Francisco. Because hardware sales bring healthy profits to Sun, "they can afford to [lose money] on Java if they have to."

Corporate customers and developers are largely unfazed and unaffected by the reorganization, but some of Sun's major partners and competitors are anxious to see how the changes will affect them and Java overall.

"Glad to see they're following our lead. It shows that they're starting to see that the embedded market requires special attention," said William Woo, an engineering director at HP's Internet division.

Unhappy over Sun's level of control of the embedded Java standard, HP earlier this month announced its virtual machine for embedded devices. HP is working with other vendors, including Sun, to set up an independent body to oversee the standardization of embedded Java, Woo said.

"We're hoping Sun would be willing to participate in a more neutral process," he said.

Bernard Spang, IBM's business relationship manager for Java software, added, "We want to cooperate in developing the technology that will become the industry standard, but the reality is we're two separate businesses that are going to compete in two separate product spaces." □

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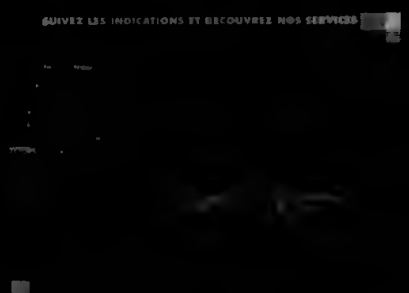

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Companies target better extranet control ...

▸ *Security, management issues top priorities*

By Carol Sliwa

THE PRUDENTIAL Insurance Company of America next month will start using a Web security product that lets it manage access rights to the online accounts of potentially millions of customers through a single sign-on.

Like many companies launching extranets, Newark, N.J.-based Prudential wanted to lay out the Internet welcome mat to customers without giving them the run of the house once they stepped inside.

There are no formal market statistics yet, but corporate users are reaching more frequently for extranet products that will let them better control outsiders' access to applications and data, observers said.

Without that kind of technology, "extranets don't happen. There's no way to secure them," said Ted Julian, an analyst at Forrester Research, Inc. in Cambridge, Mass.

In building its secure system, Prudential faced a build-or-buy decision. It was after the company designed its own system that it located a packaged software product, GetAccess from EnCommerce, Inc. in Sunnyvale, Calif.

GetAccess will help Prudential more cost effectively maintain and strengthen its security system, while eliminating the hassle of multiple passwords for its customers, said Mike Mandelbaum, vice president of information systems at Prudential.

Until now, five different business units wrote their own World Wide Web-based applications, each with their own authentication mechanisms.

For customers, that meant many passwords. And for Prudential, it was "more expensive and more work" to maintain, Mandelbaum said.

Now, programmers can rely on the GetAccess Registry Server, which sits behind a firewall, to handle authentication. When customers log in, they see a personalized view with links only to the applications and data they are allowed to access.

Prudential's Mike Mandelbaum: Extranet will let the company centralize management of customer access

TRADE-OFF

Mandelbaum acknowledged that a single point of attack can give a hacker greater access if cracked. But the beefed-up security at the entry point and centralized management constitute a "better approach than there was before," he explained.

Another user of GetAccess, Cleveland-based financial services company KeyCorp, said it will become more important to centrally enforce security policies as the company adds more Web-based applications.

"The more applications we develop, the more difficult it's going to be to manage that," said Nancy Whitney, a senior systems consultant at a KeyCorp subsidiary.

The "support nightmare" of having to reset forgotten or incorrect passwords was one factor that drove Brigham Young University in Provo, Utah, to a single sign-on system for its 50,000 students and faculty, said John Peterson, a system programmer at the school.

"It makes it feel like one big system instead of a mish-mash of different things," Peterson said.

Major vendors such as IBM offer a more comprehensive approach to single sign-on access.

Other software products on the market that address Internet-based access issues include application-based software from Axent Technologies, Inc. in Rockville, Md.; Cylink Corp. in Sunnyvale, Calif.; and Secure Computing Corp. in St. Paul, Minn., and tools from Netegrity, Inc. in Waltham, Mass., and Gradient Technologies, Inc. in Marlboro, Mass. □

... and face rising hacks, inside and out

▸ *Users prefer to tackle security breaks in-house*

By Laura DiDio

THE NEXT TIME a disgruntled employee decides to hack your corporate network, it could cost your company millions in lost data, damages and recovery.

That's what the FBI and Computer Security Institute, Inc. found in their recent Cost of Computer Crime survey.

The poll of 451 Fortune 1,000 users showed a dramatic increase in the number and severity of successful corporate hacks — particularly by company insiders.

About 241 users quantified their losses. They reported that the average dollar loss resulting from rogue employee activities last year rose to $2.8 million per incident, a fifteenfold increase from 1996 losses of $181,400 for each attack.

Similarly, insiders who use the Internet to hack into corporate networks did twice as much damage — $36,000 per incident last year compared with $18,000 per incident in 1996.

That may be only the tip of the iceberg, according to the FBI, because fewer than 20% of companies report intrusions to law enforcement.

"One of the few constants that we've seen in the last three years is that the percentage of businesses that come to us to report and investigate hacking incidents has remained steady at 17%," said Special Agent George Grotz in the FBI's San Francisco office.

"The overwhelming majority of companies fearing adverse publicity, copycat hacking and loss of customer confidence still prefer to handle their security breaches and problems in-house," Grotz said.

Patrice Rapalus, director of the San Francisco-based Computer Security Institute, said while the poll isn't scientific, it does provide some idea of computer security trends and the severity of hacking incidents.

"These numbers are generally guesstimates. And it only takes one or two big hacking incidents to significantly raise the average loss statistic," Rapalus said. But most of the 241 users who put a dollar value on the losses resulting from insider hacks "were conservative in their estimates," she said.

What users most consider in assessing their losses is damage to systems, servers, software and costs of assigning resources for recovery and investigation, noted Eugene Spafford, director of the Computer Operations Audit and Security Technology Laboratory at Purdue University in West Lafayette, Ind.

Some users, such as Dan Erwin, director of information strategy and planning at The Dow Chemical Co. in Midland, Mich., can track their security costs and dollar damages from any hacks or network outages.

"I charge $80 per hour spent on the investigation," Erwin said. That applies to everyone who gets involved and includes incident investigations, lost productivity, meeting attendance and double overtime.

Once Erwin compiles all of those costs, he adds another 20% for the time he "forgot to count."

"This usually adds $5,000 to even a minor incident. This can add up real fast if we send a department home early because the network is down or the files can't be accessed until the backups arrive and are applied," Erwin said. □

HOW MONEY WAS LOST

Average cost of computer crimes and security breaches:*

	1997	1998
Unauthorized insider access	$181,437	$2.81M
Theft of proprietary information	$954,666	$1.67M
Sabotage of data or networks	$164,840	$86,000
System penetration by outsider	$132,250	$86,000
Insider abuse of Internet access	$18,304	$56,000
Virus	$75,746	$55,000

* Can include loss of intellectual property, personnel costs and investigation of incident.

Based on 241 computer security officials

Source: FBI, Washington; Computer Security Institute, San Francisco

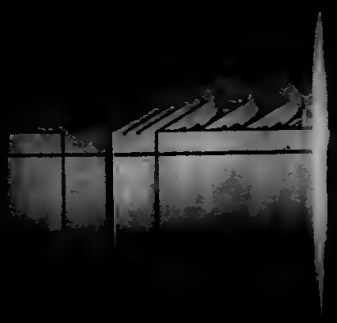
Corrections

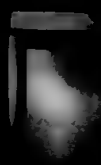
An April 13 story misstated Radiant Systems, Inc.'s role in a point-of-sale system. Radiant designed the Windows CE-based system that Chick-Fil-A, Inc. is testing. A chart accompanying the article cited incorrect sales figures for the restaurant chain. The figures are: KFC, $3.9 billion; Boston Market, $1.16 billion; Popeye's, $666 million; Chick-Fil-A, $569.7 million; Church's $526.2, million.

A product review in a March 23 story misstated the documentation that comes with Wall Data Corp.'s Cyberprise DBApp Developer. The product provides documentation for changing a database structure.

An April 6 article misspelled the name of the chief information officer at Employers' Medical Network, Inc. in Santa Clara, Calif. He is Keith Waldorf.

The source of a chart in a story about new notebook computers from Micron Electronics, Inc. [CW, April 13] was misidentified. It is International Data Corp. in Framingham, Mass.





The data warehouse partners you choose could have a profound effect on your career

Users OK with wait for new Baan components

By Randy Weston
DENVER

THE BAAN CO.'s new component architecture may be a year away from maturity, analysts said, but users are willing to wait.

"We are moving more and more toward an object-oriented environment, and that means components. Anytime you can use components, you gain a huge advantage in time and ease of implementations," said Mark D. Bland, international project manager at Kansas City, Mo.-based Butler Manufacturing Co., a $934 million maker of prefabricated buildings.

Bland was among the 4,000 attendees at this year's BaanWorld user group conference here last week. Attendees were treated to the first hands-on look at BaanSeries, originally named Baan V, due for general release in June.

ANOTHER YEAR

But analysts warned that Baan, with U.S. headquarters in Reston, Va., is still about a year from delivering true object-oriented components capable of letting users upgrade their application package piece by piece, rather than an entire system all at once.

"If you are happily implementing earlier versions of Baan, I say cool your jets until it sorts out a bit," said Byron Miller, an analyst at Giga Information Group in Cambridge, Mass.

Even some beta testers of the BaanSeries application package aren't taking advantage of the components.

BaanWorld 98
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www.baanworld.com

London, Ontario-based Trojan Technologies, Inc., a $70 million maker of ultraviolet disinfecting systems, is migrating to BaaoSeries from Triton III, an early Baan system.

"All I am concerned about is that that [enterprise resource planning] code is solid enough for us to go live Sept. 1," said Norman Thomas, systems manager at Trojan. "With respect to [adding components], I won't really be looking at that seriously for a year anyway."

Baan officials said the system will be ready in June, but the company will continue to improve the architecture over the course of the year. Users should expect deeper integration with subsequent version releases over time.

Initial efforts will focus on strategic functionality such as supply-chain planning, customer service applications and warehouse management, said Dennis Maggard, a development manager at Baan.

Flowserve's Christopher McKee says upgrading his installation will be easier

For now, Baan is using a system of file transfers to integrate pieces of its application package, especially those third-party systems that Baan gained through acquisitions, such as Aurum Software, Inc.'s front-office system.

Once the component architecture is in place, data will be transferred back and forth through business object interfaces. Baan has set up BaanConnect, a division that will work specifically on building integration among the different software systems and building the component architecture.

Baan still needs to prove that integration will be maintained among its core applications under the new component architecture.

Users said they are patient.

Flowserve Corp. in Dallas is in the midst of a 2,000-seat implementation of Baan IV. Christopher McKee, director of the Baan implementation at the $1.2 billion pump maker, said his office is willing to wait for the new architecture because it will make upgrading the huge installation much easier.

"We will be able to take functionality like the Quality Control module and pick that plum off the tree and use it without having to take the entire tree," McKee said. He said not having to upgrade the entire Baan application package will save time and money. □

Dow glitch looms

By Tim Ouellette

WALL STREET'S GAIN could mean more pain for some beleaguered information systems departments.

That's because computer systems that deal with financial markets may not be prepared to handle a major milestone: the day the Dow Jones Industrial Average hits 10,000.

Many data fields in older computer systems that deal with the stock market allow only four digits instead of the five that could be needed very soon.

"Trading organizations face potential massive exposure if the [Dow] passes 10,000 and their systems interpret it as 1,000 — or 0,000," said Andy Kyte, an analyst at Gartner Group, Inc. in Stamford, Conn., in a recent report.

If the stock-market boom continues, the Dow could hit 10,000 before the year 2000, posing a more immediate problem to some corporate computer systems. The Dow closed every day last week above 9,000.

It isn't just brokerages and financial houses that could be affected, either. Companies with their own investment divisions, even large Fortune 500 manufacturers, may want to check their systems, Kyte advised.

One mainframe software company that sells year 2000 fixes has even begun promoting one of its system screening tools as a way to identify problem areas related to a 10,000 Dow. "If you deal with the Dow, you may have some kind of issue," said Ed Severs, a vice president at ADPAC Corp. in San Francisco. "It may not be as pervasive as the data fields for the year 2000, but users need to be aware of it."

No one has yet tabulated the potential damage such an occurrence would cause or how much it may cost businesses to fix their systems.

But one Internet trading firm doesn't expect to have problems. Ameritrade, Inc. in Omaha trades specific stocks and doesn't use programs that analyze the Dow average, said company President Michael Anderson. □

Users face front-office quandary

By Kim Girard
DENVER

COMPANIES COMMITTED to an enterprise resource planning (ERP) project share a classic quandary: to wait until their vendor cooks up what they need for the front office, or to commit to a niche company.

"That's a hard call to make," said Byron Miller, an analyst at Cambridge, Mass.-based Giga Information Group, a consultancy in Cambridge, Mass. And it is a question users considered at BaanWorld here last week.

Users that are already committed to a separate front-office project or those in a rush to install may consider a top niche player a better bet. But companies that plan to use an ERP vendor for both front- and back-end applications have fewer integration and upgrade headaches, Miller said.

"Users are waiting for back-end vendors to come out with front-end products," said Christopher McKee, Baan implementation director at Flowserve Corp., a pump maker in Dallas with 2,000 users and $1.2 billion in revenue.

The company now uses SAP to automate the business process and Trilogy Corp. configuration software to track its product line, but it is taking a second look at front-office vendor Aurum Software, Inc. because that company is part of Baan, McKee said.

BOC Gases' Robert Teichman is re-engineering the firm's back-office legacy systems

Besides Baan, SAP AG, PeopleSoft, Inc. and Oracle Corp. are racing to roll out front-office suites of customer-management, sales, call-center and marketing-automation components. That challenges front-office niche players such as Aurum, Siebel Systems, Inc. and Vantive Corp. to stay one step ahead.

Aurum, for example, promises to deliver by summer Aurum FrontOffice, a World Wide Web-based software suite designed to work with Microsoft Corp.'s Internet Explorer browser and tie to Baan, Oracle and SAP back offices.

Today, only Baan — through its subsidiary Aurum — has a marketable front-office program. SAP, PeopleSoft and Oracle are expected to follow up with a full suite of products within the next 18 months, said Steve Bonadio, an analyst at Hurwitz Group, Inc., a consultancy in Framingham, Mass.

Though not ruling out a front-office package, Sam Cox, chief information officer at Brother Industries USA in Memphis, said the company won't be looking until it is "at 95%" usage with SAP. The company's sales force has dial-in access to the SAP system, can enter orders and gather information about inventory and forecasting, and has no need to add another layer of complexity, Cox said.

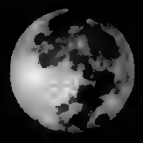
"People get enamored with technology, and they don't try to optimize what they've got," he said.

But companies such as Butler Manufacturing Co. that aren't yet standardized on an ERP system are presenting an opening for companies such as Aurum.

"We have to go with what works," said Steven J. Shearer, vice president of corporate accounts at Butler, a Kansas City, Mo.-based building company that has a homegrown back-office system and is upgrading to an Aurum front office. "We looked at Siebel and all the others. We weren't worried about integrating; we wanted [best of breed]."

"The problem is, if you wait [to install a front office], you don't get the immediate benefits," said Robert Teichman, manager of information systems at BOC Gases in Lebanon, N.J., which installed Aurum 18 months ago and is re-engineering its back-office legacy systems. □

Staff writer Randy Weston contributed to this report.



"If they can put a man on the moon, why can't they solve my company's IT problems?"

We did. And we [illegible]

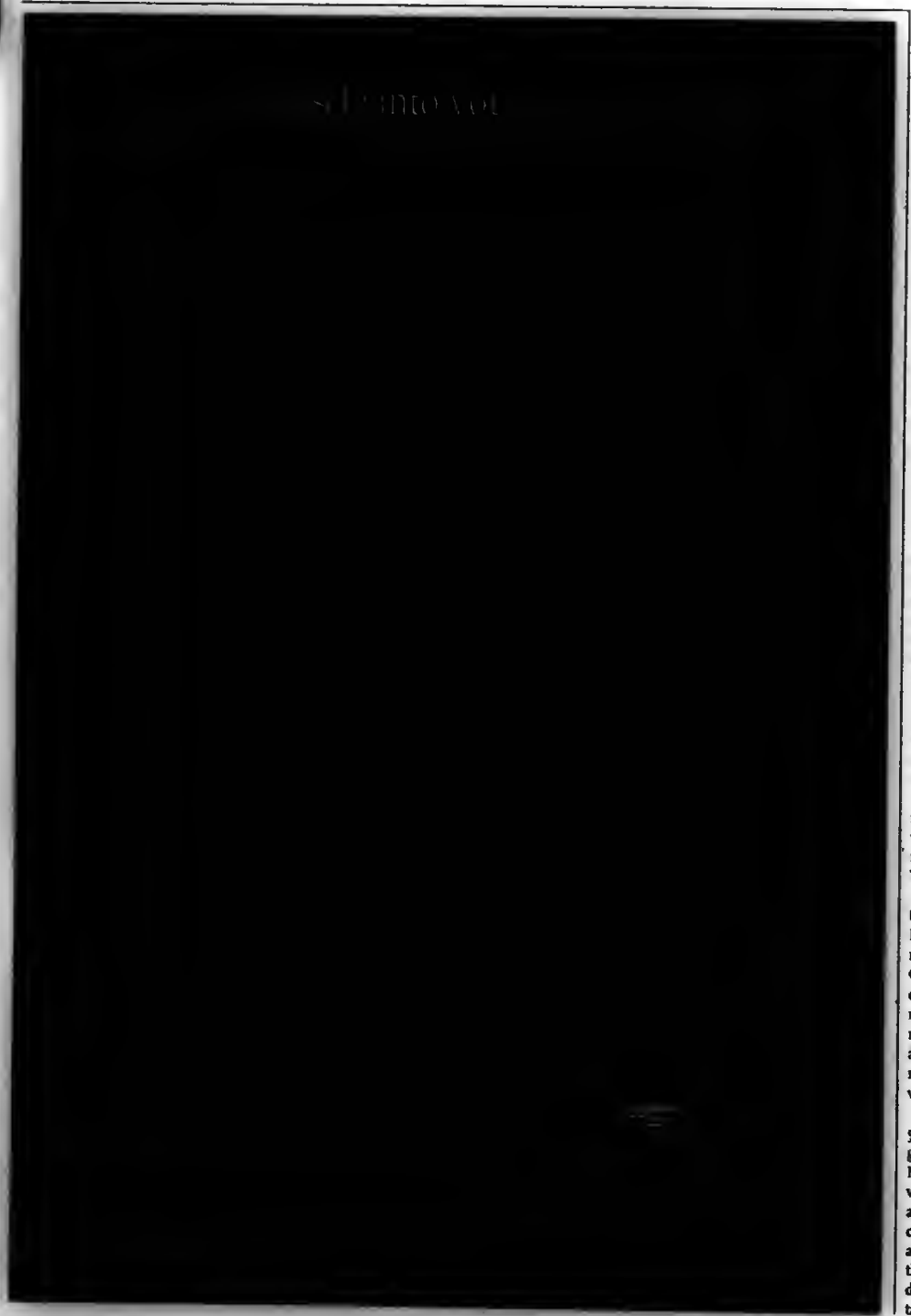
NetWare 5 beta renews interest in Novell

By Laura DiDio

EARLY TEST REPORTS from users indicate that the final beta release of Novell, Inc.'s NetWare 5, like earlier versions, is surprisingly bug-free and robust.

Ten businesses contacted by *Computerworld* said the overall reliability of NetWare 5's Beta 3 has renewed their confidence in the operating system. It also has given them the ammunition they need to persuade upper management to stick with NetWare and not switch to rival Windows NT.

Users credited features such as the long-awaited native TCP/IP support and enhancements to Novell Directory Services (NDS) for their renewed faith (CW, April 20). The pairing, they said, will increase network efficiency and manageability and slash costs 20% to 30%.



A year ago, the Florida judiciary system came to "a fork in the road." It had to either upgrade its NetWare networks or completely switch to Windows NT, said Robert De Cardenas, network coordinator at the Florida Supreme Court in Tallahassee, Fla. NetWare won out because De Cardenas was able to show that total cost of ownership was 25% cheaper than with NT.

Analysts have given Novell CEO Eric Schmidt high marks for refocusing on the company's core NetWare operating system and services and sticking to delivery timetables as part of his yearlong turnaround of the Provo, Utah, company.

Novell may be helped by the fact that NetWare 5 is on schedule, while Microsoft Corp. faces delays in shipping the next version of Windows NT. Microsoft is officially mum on the matter, but many industry observers said they now believe NT 5.0 won't ship until at least early next year.

"Without a uniform directory, I'd have a networking Tower of Babel on my hands."
– Matt Rice
USTrust Bank

"Novell has a real opportunity here to make a comeback and stem some of the defections to Windows NT, which [haven't] been as great as we've been led to believe," observed Bob Sakakeeny, an analyst at Aberdeen Group, Inc. in Boston.

Matt Rice, vice president and senior network manager at USTrust Bank in Cambridge, Mass., said his company favored converting fully to Windows NT a year ago, but the pendulum now has swung back toward NetWare.

"NDS and NDS for NT are compelling reasons for sticking with it. Everything we do is cross-platform. Without a uniform directory, I'd have a networking Tower of Babel on my hands," Rice said.

IMMEDIATE NEEDS

Rodolphe Jabbour, an integration lab manager at General Motors Acceptance Corp. in Detroit, said in the absence of a definite ship date for NT 5.0, the automotive giant won't bank on futures. "We need the functionality of NetWare 5 and add-on tools like NDS for NT to centrally manage our mixed NetWare and NT networks right now," he said.

Among the new features in NetWare 5, due this summer, are a Java-based graphical user interface console, a new NetWare operating system kernel with virtual memory and disk caching for fast application access, support for Sun Microsystems, Inc.'s Java Virtual Machine and a wide-area network traffic manager that lets administrators control NDS updates over the WAN link and schedule tasks during off-peak hours. □

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FRANKLY SPEAKING

For fun and glory

FRANK HAYES

LAST THURSDAY, the money machines met the 21st century at England's Nationwide Building Society. Nationwide — which is a bank, not a construction company — started testing new automated teller machines (ATM) that identify customers by scanning their eyes instead of reading a plastic card and identification number.

Cameras on the new ATMs scan the customer's iris — the colored part of the eye surrounding the black pupil — from as far as three feet away. Then the system checks the scan against a database of previously scanned customer eyes. The whole process takes three seconds, which is less time than it takes most people to insert their ATM card and key in an access number.

Cool, no? What's even cooler is that Nationwide didn't have to do any technological heavy lifting. NCR Corp. built the ATMs with technology from IriScan, Inc. in Mt. Laurel, N.J., and Sensar, Inc. in Moorestown, N.J. Nationwide's IS people get the fun and glory of being cutting-edge pioneers without much work and almost no risk.

Of course, just now fun and glory are the farthest thing from your agenda.

Set up some spare-time, off-the-budget projects amid the millennial mania.

You're about to have your own collision with the 21st century: For the next 20 months, it's crunch time for year 2000 fixes, as your IS staff beats its collective brains out to keep your company's systems alive past Dec. 31, 1999.

All the more reason to start some cutting-edge projects of your own — and start them right now.

Look, you aren't just at risk of missing the year 2000 deadline. You also risk losing your best people, burned out from endlessly fixing and testing and refixing and retesting two-digit date fields.

That's not why they got into IS. They're there because they love technology. They love learning it, using it and making it stand up and do tricks. It's bright, shiny and new. In other words, it's everything the grim, gray grind your year 2000 project won't be.

How do you keep those people happy, sane or just plain *keep* them?

Give them a chance to try technology your company normally wouldn't use.

Set up some spare-time, off-the-budget projects to channel that desperate technical creativity amid the mind-numbing millennial mania.

Maybe that means scoping out smart cards, experimenting with encryption or dabbling in distributed computing. Those things used to be rocket science, but today they're all within the reach of bright IS people — and they all can be explored on the cheap.

Or maybe it means piloting (at some vendor's expense) oddball new technologies like Nationwide's eye-scanning ATM. Is there a place in your business for that stuff? You'll never know until your people start looking for ways to apply it. But you — and they — *will* know there's more to their jobs than an endless tunnel of date-field changes.

Think you can't afford to lose a few hours per week from your year 2000 team? Ask them. See how they feel about being rewarded with, say, 10% of their time to spend on projects that really excite them while they spend the other 90% grinding out millennium fixes.

If they really aren't interested, well, you've found the perfect collection of zombies for your year 2000 work. But if they're like most techies, they'll gladly make year 2000 magic happen if the time they save is plowed back into something cool.

So squeeze out a few discretionary dollars and steal a little time for something well beyond the ordinary. Then see how heroic your date fixers become when they've got a little fun and glory to live for. □

Hayes is Computerworld's *staff columnist. His Internet address is frank_hayes @cw.com.*

SHORTS

FTC amends Digital order

The Federal Trade Commission (FTC) last week approved last October's patent infringement settlement between Digital Equipment Corp. and Intel Corp. with one modification. The order required Digital to drop its original plan to have Intel produce Alpha chips for Digital's use. Instead, FTC regulators gave conditional approval to the settlement by requiring Digital to license its Alpha technology to Advanced Micro Devices, Inc., Samsung Electronics, IBM and other commission-approved licensees. Intel will still get the chip plant under the deal.

Court hears Microsoft, DOJ

In last week's hearing between Microsoft Corp. and the U.S. Department of Justice before a federal appeals court in Washington, two issues were argued: whether Microsoft should be permanently banned from shipping Windows 95 with the Internet Explorer World Wide Web browser and whether the appointment of Lawrence Lessig as a special consultant to the court was appropriate. The Justice Department and Microsoft reiterated past positions (Microsoft: no and no; Justice Department: yes and yes). The court has one to three months to return a decision.

Boy gets pokey.org

Twelve-year-old Christopher Van Allen will get to keep his pokey.org domain name after all. Prema Toy Co., holder of the Gumby and Pokey trademarks, had initially sought ownership of pokey.org, citing trademark protection. But after some legal exchanges and a massive Internet campaign on Van Allen's behalf, Art Clokey, creator of the Gumby and Pokey characters, stepped in to say he wants Van Allen to keep pokey.org. "Mr. Clokey is [a] real nice person, and he never wanted this to happen," Chris said in a statement on his Web site.

Skills shortage hits sales

Some businesses are scaling back revenue expectations because they can't find enough qualified information technology workers, according to a new survey of 441 product and service companies. In fact, 11% have reduced revenue estimates for the next year by an average of 9.4%. And 14% of businesses said they are delaying new business projects or expansions. The survey was conducted by consulting giant Coopers & Lybrand LLP in New York.

Study: Year 2000 work lags

More than half of the nation's 250 largest corporations have yet to complete even the first phase of their year 2000 projects, according to a private research firm that looked at federal securities filings. Triaxsys Research LLC in Missoula, Mont., said 58% of the companies had yet to complete phase one — computer assessments. Thirty-six percent had begun converting at least some systems, but only 6% were far enough along in the process to be testing them.

IBM: Service or money back

IBM has announced new money-back service-level agreements that guarantee a 95% accessibility rate to telecommuters and other dial-up users of its IBM Global Network. Service-level agreements previously were available exclusively to dedicated network users. Other enhancements to IBM's managed network services include the availability of custom-designed and managed messaging services and support for the new V.90 modem standard for data speeds up to 56K bit/sec. over an analog connection. The new services will be available July 1.

Financial results: 2 up, 2 down

Some winners and losers among quarterly financial results reported last week: Westboro, Mass.-based Data General Corp. showed a net loss of $4.5 million on revenue of $361.8 million for its quarter ended March 28. Silicon Graphics, Inc. reported a loss of $153 million on revenue of $708 million. Both companies had been profitable in the same quarter a year ago. WorldCom, Inc. in Jackson, Miss., posted revenue of $2.35 billion, up 38%, and net income of $193 million, up 672%. PeopleSoft, Inc. in Pleasanton, Calif., reported an 81% increase in revenue (to $277.7 million) and 90% increase in profit (to $33.8 million) over the same quarter last year.

Compaq factory re-opens

Compaq Computer Corp., based in Houston, temporarily shut down one of its factories for two weeks early this month in an effort to reduce unsold computer stock. The factory has since re-opened. The PC maker had issued statements last month indicating it had too many PCs sitting on its resellers' shelves. The company has been cutting prices and also conducted a monitor giveaway program to help boost sales.

SHORT TAKES SAP AG plans to make a $10 million investment in French company Ilog SA to include advanced C, C++ and Java software components in SAP's Advanced Planner and Optimizer product to be released in July. ... Italy's largest bank, Banca Di Roma, has signed a $1.5 billion, 10-year outsourcing deal with Electronic Data Systems Corp.

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SEQUE
TANDEM

StorageTek, Compaq to partner on NT products

▸ *Compaq users to get high-end storage options*

By Nancy Dillon

WHEN STORAGE TECHNOLOGY Corp. announced its first Windows NT storage products in March 1997, analysts called the technology solid but the sales forecast dismal. StorageTek had no tie to an NT server base and no direct sales focused on NT.

What StorageTek needed was a partner — preferably a partner with sizable server market share and a mature Windows NT distribution channel. And that's what it now has.

Last week, Louisville, Colo.-based StorageTek and Houston-based Compaq Computer Corp. announced a deal in which Compaq will partially fund StorageTek research in exchange for the rights to jointly sell resulting NT-centric products. The first two products expected from the collaboration are a Fibre Channel switch due late this year and software called Virtual Storage Manager for NT due next year.

GOOD IDEA

Analysts said the deal makes sense for Compaq because the top-selling PC server vendor wants to move up the NT stream, and StorageTek is known for understanding enterprise customer needs.

Compaq does stand to gain Digital Equipment Corp.'s StorageWorks division if its pending merger with Digital is approved.

But Compaq officials said the StorageTek products they eventually choose to sell will most likely complement, rather than replace, Digital's offerings.

Users said they see significant benefits resulting from the collaboration.

David Nuechterlein, a technical support consultant at Nissan North America, Inc. in Englewood, Colo., has 10 Windows NT servers from Compaq in his data center and will acquire 20 more later this year.

"The partnership sounds good because when we buy storage for our new servers, we'll be interested in both the best technology and in leveraging our existing vendor relationships," Nuechterlein said.

He said StorageTek understands high availability.

"It was a hassle getting servers from Compaq with no internal hard drives," said Tony Holland, data processing manager at Long Motor Corp. in Lenexa, Kan. "We didn't get a sense that Compaq was pro-external storage."

As NT scales up, he said, Compaq will have to better understand the "external paradigm."

RISING STAR?

The partnership should place StorageTek as a key player in open systems down the line, said Robert Gray, an analyst at International Data Corp. in Framingham, Mass.

"Just look at what happened the last time StorageTek coupled its technology with someone else's marketing and distribution," he said, referring to the company's 1996 Iceberg mainframe array deal with IBM.

The partnership with IBM brought to StorageTek almost $300 million in revenue last year and vaulted the company to the position of No. 2 OEM disk system supplier. □

Data warehouse unites parts makers

CONTINUED FROM PAGE 1

in a really clunky fashion. It's been pretty much a paper transfer of information," said David Crum, president of Crum Electrical Supply Co., a privately held distributor in Casper, Wyo.

Business-to-business electronic commerce has been severely limited because the industry has lacked a common language to describe the more than 1 million parts it produces and sells.

"With the data warehouse, we'll get information in a complete and standardized way from the manufacturer. Once we have that, everything else, including specification checks and invoicing, can also be handled in an electronic fashion," Crum said.

Thomas & Betts' John Haluska: Manufacturers' product data will be loaded into the central data warehouse to be continually updated and accessible to users around the clock

WORKING TOGETHER

The industry gets an A for cooperation.

"I haven't seen this kind of industrywide agreement before" that includes both manufacturers and distributors, said Dirk Heartman, a product manager at CCI Triad Systems Corp., which has developed electronic catalogs for the automotive aftermarket and lumber industry.

The approach calls for parts manufacturers to format their product and pricing data according to guidelines from the Industry Data Exchange Association, which was recently formed by electrical manufacturers and distributors.

So far, trading partners have identified more than 125 data fields that will contain information that ranges from a product's name and component parts to the cubic dimensions of its packaging.

Packaging data, for example, could be funneled directly into a distributor's internal warehouse system to allocate storage space for the product more accurately.

UP-TO-DATE DATA

Manufacturers' product data will be loaded into the central data warehouse, which will be continually updated and accessible to users around the clock via a value-added network, said John Haluska, chief information officer at Thomas & Betts Corp. in Memphis, one of the project's key proponents. Future plans call for the trading partners to access data via a frame-relay-based extranet.

CCI Triad in Livermore, Calif., has been hired to build and administer the warehouse. Trade Service Corp. in San Diego will work with manufacturers to format their product data in accordance with warehouse specifications.

Industry sources wouldn't disclose the cost of the project other than to say it would cost "millions."

Once built, warehouse support costs will be funded with per-transaction fees paid by users. □

Central repository saves money

Sending electrical parts product information and changes once to a central repository will significantly reduce electronic data interchange (EDI) costs and data errors for companies that participate in an industrywide data warehousing project.

Partners in the effort said product information changes now cost between $300 and $350 each to track down and correct under the EDI-based system.

Now, for example, $2 billion Thomas & Betts Corp. separately notifies each of its 650 distribution customers of each and every specification and pricing change to its line of 130,000 products.

"In today's world, we go in all directions. It's a spider web," said John Haluska, CIO at Thomas & Betts, referring to the company's complex EDI operations. The warehouse, by contrast, "will take away all of those EDI costs," he said.

But even more important, partners said, are the efficiencies that can accrue by synchronizing data in other in-house systems, such as billing and financial systems, with data in the industrywide warehouse.

"As we are able to develop more pure electronic relationships, we will be able to grow without adding more accounts payable and purchasing people. We'll also be able to provide our customers with more accurate and more timely service," said David Crum, president of Crum Electrical Supply Co.

Analysts agreed.

"This is the first step in integrating the supply and demand sides of the industry," said Ted Ryback, president of Benchmarking Partners, Inc., a Boston-based supply-chain consultancy. "The real benefits will come in the visibility and collaboration that can now occur among trading partners." — Julia King

Airlines hope to link travel, rewards programs

By Bob Wallace

EFFORTS BY major airlines to simplify travel and link passenger rewards systems through marketing alliances face information systems hurdles.

American Airlines and US Airways last week announced plans to link their frequent-flier programs and list each other's flight connections for travel agents and airline customer service representatives.

Travelers who are members of both programs would benefit by being able to combine miles to claim an award or travel on either airline.

United Airlines and Delta Air Lines confirmed they were discussing a similar plan. But officials at United on Friday said that the parties had suspended talks.

Each of the alliances would require a lot of systems integration work, observers said. Ticketing could be a major headache.

"Granted, it's a great concept, but it's an absolute nightmare for the people that have to program rates and routes in the computers used to sell tickets," said Joseph Berman, a senior analyst at Avmark, an aviation consulting firm in Arlington, Va.

"It will take months to get everything properly established," Berman said. □

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What a difference a year makes; new Bay team eases user concerns

By Bob Wallace

ALTHOUGH Bay Networks, Inc. still faces the daunting challenges of rapid growth, some customers say the company has come a long way since introducing a new management team and product strategy at last year's Networld/Interop.

Since then, Bay has found a product direction, aggressively entered key markets and eliminated the internal turmoil that devastated the company and cost it business, all while maintaining customer service and support, veteran users said.

Bay was created by the 1994 bicoastal merger of California hub vendor SynOptics Communications, Inc. and Massachusetts router maker Wellfleet Communications, Inc., which gave the company a split personality.

But Bay CEO David House pulled both camps into a single unit, which was a "master stroke," said Chris Horrocks, chief information officer at debt-collector Commercial Financial Services, Inc. (CFS) in Tulsa, Okla. "And the product direction he architected is very attractive to us."

Emory University's Barbara Maaskant says Bay's acquisitions make it competitive

CFS was a Bay customer before House and the other senior management arrived, but CFS didn't feel comfortable spending big on the company until it became acquainted with the new group and heard its plans.

"If we had had to consider Bay a year before House arrived, we would've had big reservations," Horrocks said. But now that Bay's house is in order, CFS has invested more than $2.5 million on an Asynchronous Transfer Mode building backbone network, which brings its total investment in Bay equipment to roughly $5 million.

Reynolds Metals Co. is especially pleased with Bay's acquisitions of Layer 3 switch start-up Rapid City Communications, Inc., extranet access switch maker New Oak Communications and NetICS, which builds low-cost 10M/100M bit/sec. LAN switches.

"The acquisitions have brought them lots of new and exciting products, including advanced switching technology, that we're definitely interested in because people need more and more speed," said Debbie Shashaty, lead communications consultant at Reynolds Metals in Norfolk, Va. "Their increased focus on switching is helping them."

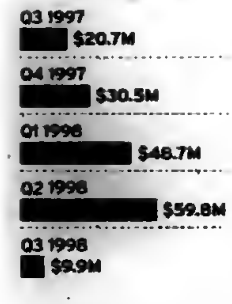
Barbara Maaskant agreed. "Bay's mergers and acquisitions under House were really good decisions because they made Bay more competitive and let it enter new markets," said Maaskant, executive director of information services at Emory University's business school.

Utility company Entergy Services, Inc. used SynOptics and Wellfleet products before the two companies merged.

"We've had our share of ups and downs with their products and code releases, but we're still standardizing on their product line," said Tyrone Weathers, a network technician at Entergy in Gretna, La. "They seem to be more customer-focused." □

BIG DROP

Bay's net income suffered a big hit



Note: Excludes onetime charges

Source: Bay Networks, Inc., Santa Clara, Calif.

RIVALS BROADEN MANAGEMENT OFFERINGS

Computer Associates	Tivoli Systems
Functional solution Stand-alone tools (asset management, security, software distribution, directory management, etc.) in small-business or enterprise versions	**IT Director** Suite of tools to manage small-business networks of up to 600 PCs, and some NetWare, OS/2 and Windows NT servers
Neural network technology First comes an option for Unicenter TNG. Next year comes Unicenter – The Next Dimension with built-in capability	**Simpler version of TME 10** Next release of enterprise framework adds installation shortcuts, Java interface and automated processes

Focused tools

CONTINUED FROM PAGE 1

framework, streamlining essential tools and processes for those who manage fewer than 600 PCs. The IT Director suite, introduced last week, is expected to ship by fall.

CA's focused products will also come in enterprise versions, and its "next-dimension" management tools promise to offload tasks from small or large staffs. And Tivoli is overhauling TME 10 with automation, shortcuts and Java interface enhancements from IT Director.

The competition should give small businesses and large enterprises better options, analysts said.

"They are taking different positions yet trying to overcome the same objection from customers: that it takes years to get all the benefit from these tools," said Steven Foote, an analyst at Hurwitz Group, Inc. in Framingham, Mass.

COUNTING ON OTHERS

Both CA and Tivoli will rely on integrators and distributors to sell and support products for small businesses. That will let them "concentrate on their multimillion-dollar customers," said Chip Ghedman, a management analyst at Giga Information Group in Cambridge, Mass.

CA will offer new point products focused on tasks such as asset management, security, directory management and software distribution. Those so-called "functional solutions" will come in two forms, according to sources briefed before the CA-World '98 user conference this week in New Orleans — versions limited to a single-server office or versions that can support an enterprise.

Some corporate users of Unicenter TNG said the approach will deliver business benefits faster than possible through the suite. But they cautioned that the long-term benefits of using the suite outweigh the short-term gains of point tools.

"The suite took a lot of selling here. So CA could market its tools easier if you don't have to buy and install the whole thing," said Ken Shaurette, an information security systems staff adviser at American Family Insurance Group in Madison, Wis. "However, it's nice to have everything."

Both CA and Tivoli will rely on integrators and distributors to sell and support products for small businesses.

CA's two-phase rollout of neural network technology begins this week with beta-testing of an optional pattern-recognition engine for Unicenter TNG. The suite will add the engine sometime next year in a major release to be called Unicenter — The Next Dimension, sources said. By recognizing patterns and learning from them, neural network technology promises automated help in detecting and preventing problems. For example, a manager could play a recorded performance profile under conditions expected at a certain time, and the results would predict how well networks and systems will handle those conditions.

"It would be great if this [neural network] stuff could keep all the pieces configured and tuned properly," said Dennis Mitchell, an IS vice president at BankAmerica Corp. in San Francisco. Tivoli officials said the next release of TME 10 was "developed in parallel" with IT Director to improve ease of use in enterprises. □

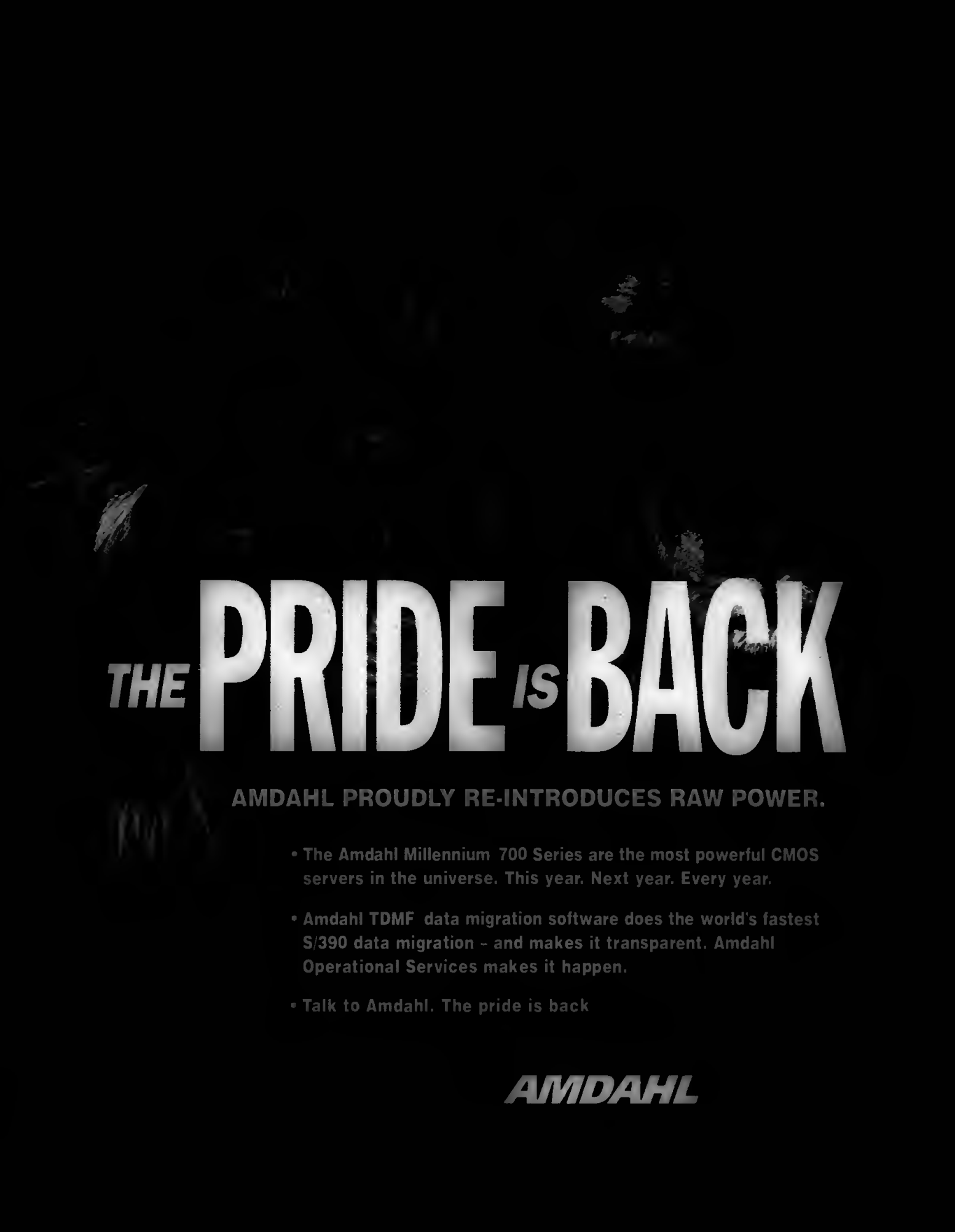
Recent AT&T outage shows need for backup

AT&T Corp. said last week that its national frame-relay network crashed on April 13 during a software upgrade of one its Cisco Systems, Inc. StrataCom switches. The procedure caused false messages to be sent over the network, flooding 145 other switches and shutting them down.

AT&T Chairman C. Michael Armstrong said customers will be rebated about $40 million for the nearly two weeks it took to fix the problem.

Thousands of businesses were affected by the outage, which lasted up to 26 hours for some. Several business network managers who are AT&T customers said the outage was a reminder to have a backup network in place.

Armstrong said AT&T hasn't lost any customers but will talk to them about the need for backup. — Matt Hamblen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Gateway shifts focus to corporate customers

By April Jacobs
CHICAGO

GATEWAY 2000, INC. is switching gears to attract a corporate audience. Last week, the predominantly direct marketer of PCs announced plans to shorten its name and expand its use of the channel to support corporate customers. But analysts say the hybrid model, which has been tried by others, doesn't work.

Now known as Gateway, the company said it will beef up staff and support for the resellers it already uses for wholly owned subsidiary ALR, Inc., which offers high-end servers. The idea is to deliver custom-built PCs and server products to those same resellers — a direct-model benefit — while taking advantage of channel support and integration services to better assist business customers.

But analysts predict the move will bring the Sioux City, S.D.-based company into conflict with its channel partners — the same way similar moves last year by Houston-based Compaq Computer Corp. led to conflict when it tried to implement a hybrid distribution model.

Resellers don't like to compete with a supplier's inside sales force, said Lynda Fitzpatrick, an analyst at Framingham, Mass.-based International Data Corp. (IDC).

But observers said Gateway needs the service and support resellers can offer to build confidence in its products among business users. That's especially true in the small and midsize corporate arena, where users typically need more handholding than in enterprise environments where there is more dedicated on-site staff to handle integration and support. The company has battled to be considered in the same class as Compaq, Dell Computer Corp. in Round Rock, Texas, and IBM.

IDC analyst Roger Kay said Gateway may be taking advantage of the fact that resellers are also scaling upward the service and support levels they can provide, including being certified by Intel Corp. in Santa Clara, Calif., to build PCs themselves and provide integration. Users said they like the direct-vendor model employed by Dell, but they also appreciate the service resellers can deliver.

> "Most people like going direct because when they don't have to deal with a middleman, they feel they can get answers to problems faster
> - George Przybysz
> Old Second National Bank

"Most people like going direct because when they don't have to deal with a middleman, they feel they can get answers to problems faster and maybe [get] better prices," said George Przybysz, senior network administrator at Old Second National Bank Corp. in Aurora, Ill.

Indeed, Dell may have the edge over its competitors right now, analysts said. The company has always focused on corporate users — marketing through direct and Internet-based selling — so it has no need to make painful changes. It can offer very competitive pricing, already has direct sales and support in place and is well-equipped to deal with the cutthroat price wars taking place.

Gateway, in contrast, doesn't have a comprehensive World Wide Web-based sales system in place. □

Microsoft's missteps a diversion

Microsoft Corp., with some high-profile blue screens, gaffes and sneak previews, added some color to a mostly bland Comdex/Spring '98 and Windows World '98.

• It was as if he were accustomed to it. Microsoft CEO Bill Gates didn't miss a beat when his demonstration of Windows 98 "blue-screened," or crashed, last week during his Comdex keynote speech. Just after Gates' assistant, Chris Capossela, said scanners are the most-returned peripheral because of linking problems and that new technology is available to fix that, he plugged one in and, blammo, the system died. "That must be why we're not shipping Windows 98 yet," Gates quipped.

• But the blue screen would haunt Microsoft beyond Gates' keynote. In a breakout session on developing applications with Microsoft's BackOffice, product manager Mike Iem spent 30 minutes trying to get his system to run before people started to walk out. While talking about how easy BackOffice makes development, Iem got an error message. Then the heckling began. "I've never seen this before," Iem said. Someone answered, "Then you're the only one." So Iem took a second shot at building camaraderie and said, "This is scary." "Yeah, we know," yelled another heckler.

• Microsoft is working on making Windows' error messages a little easier to swallow. "We were surprised at how many there are and how cryptic they are," Gates said. He said Windows 98 is being designed to sport new messages that offer hot-link buttons for diagnosing and fixing problems. Maybe he should get that for the BackOffice team.

• While downing free drinks at a Microsoft party, some IS staffers from Chevron Corp. said that while at Comdex they had learned a new equation they had never been taught in algebra class. To figure the actual release date for a Microsoft product, take the first date the company comes out with and add 18 months. "Now that's good math," said one engineer. "We're not bitter," said a second.

• Windows NT users chatted up the fact that Microsoft is rumored to be releasing the second beta for Windows NT 5.0 at Tech Ed in New Orleans in early June. Microsoft had no comment about that date. With an official release date floating somewhere in 1999, users are eager to see as much as they can now. □

Compiled by senior editors Sharon Gaudin, Kim S. Nash and senior writer April Jacobs.

As Microsoft and the Justice Department continued to battle over the company's practices, CEO and Chairman Bill Gates emphasized that with a Web browser integrated with Windows 98 "you just learn one thing and that's the browser."

Windows 98 is expected to ship to PC makers next month and hit the streets in June. Gates also said Microsoft has invested $1 billion a year to improve Windows and has 2,000 employees to work with developers.

And he predicted that for users, "Windows 98 will take over from Windows 95 very rapidly." — IDG News Service

Microsoft

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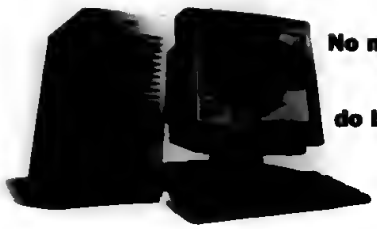

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Need info? Help yourself

▸ Information Builders' WebFocus app links databases to the Web

By Patrick Thibodeau
NEW ORLEANS

HERE COMES THE marketing department. To the information systems staff at Federal Express Corp.'s retail division, the queries from marketing colleagues wanting to pick out trends from a collection of databases can feel like rush hour on the interstate.

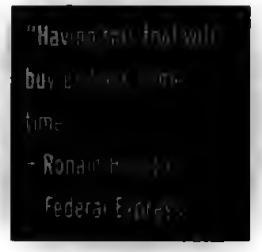
When the marketing department requests a report — such as an analysis of packages dropped off in a certain ZIP code — the IS staff culls the answers from information contained in databases that keep track of 7 million packages per month, or 21% of FedEx's total deliveries.

To help the information flow, the Memphis-based company is testing an application that allows its marketing division to produce its own reports via a browser front end, said Ronald Houston, FedEx's systems and support manager.

Houston outlined his project last week at the Information Builders, Inc. users' conference.

Like many of the 800 conference attendees, Houston said his company uses Information Builders' Focus language and its middleware products to develop reports from different databases.

Officials at New York-based Information Builders, a privately held company with $287 million in revenue last year, said Focus, developed in the mid-1970s, is used at about 8,000 sites by 5,000 user companies. Discussions about the vendor's WebFocus application server, which was introduced about two years ago to make Focus-based reports accessible to users with a Web browser, drew a lot of interest at the conference.



Users considering the Web front end said they believe it will provide benefits, but not necessarily clear-cut ones.

TIME SAVER

In the case of FedEx, Houston said he believes the self-service approach will make his eight-member IS team more productive and allow it to participate in special projects in the division. "Having this tool will buy us back some time," he said.

Kathy Herzog, a senior systems analyst at Nordson Corp., an adhesive applicator maker in Westlake, Ohio, said she is looking at using WebFocus to improve customer service. "It gets the information out there a lot more quickly," she said.

Betsy Burton, research director at Gartner Group, Inc. in Stamford, Conn., said the Web front end may not be for everyone. The application is probably best in specific tactical situations to satisfy an immediate need quickly, she said.

SCALABILITY QUESTIONED

But for companies looking for uninhibited growth in a Web-based application that links multiple databases and involves many hundreds of end users, the scalability of middleware technology such as WebFocus remains a question mark.

At the Kennedy Space Center, in Cape Canaveral, Fla., Ronald Phelps has been leading a project that uses Information Builders middleware to integrate the databases involved in preparing and launching a space shuttle. The project also uses WebFocus to make data accessible to engineers and contractors via a Web browser.

Because of downsizing, the National Aeronautics and Space Administration is switching to a system in which it uses measurements obtained from systems used to monitor a contractor's work on the shuttle.

"We can no longer afford to have an engineer sitting next to a contractor," Phelps said. He said he believes the system can provide as good or better monitoring while freeing up engineers for research. □

ICE group questions compliance claim

By Sharon Machlis

WHEN A BOSTON firm announced what it called the "first commercially available Information and Content Exchange (ICE) application" earlier this month, the organization developing ICE expressed surprise.

According to the ICE Authoring Group, the standard doesn't exist yet. "Announcements about commercially available products supporting ICE are premature," the group said in a statement released last week.

ICE is meant to simplify the transmission of data among businesses over the Internet. The proposed standard is being reviewed by a committee and is expected to be submitted to an industry organization such as the World Wide Web Consortium for formal approval in June or July.

"We have to be careful about confusing the marketplace," said Brad Husick, vice president of business development for Vignette Corp. in Austin, Texas, and a spokesman for the ICE Authoring Group.

JUMPING AHEAD

Inso Corp., which said its DynaBase Command Line Interface is an ICE product, has followed ICE's stated goals on how to define and communicate data, said John Bachman, director of marketing at DynaBase. Inso isn't claiming ICE compliance now, but Bachman said he believes the product will be compliant when ICE is finalized.

"As a user, I am excited that vendors are preparing to adopt the standard," said Jay Brodsky, product manager for Web syndication at Tribune Media Services in Chicago. "As a member of the authoring group, [I know] it would be really hard for someone to have a compliant product when it doesn't exist yet."

Brodsky said he hopes to use ICE to automate sending information such as newspaper columns and horoscopes to the Tribune's clients, who post the data on their own Web sites. Now, he said, he has to set up a separate way of sending data to each client. □

What's driving the directory push?

- Increase electronic commerce, which means companies will need to provide outside access to their directories
- Management of messaging systems and multiple directories has become complex enough that companies ar condidering new approaches
- LDAP has emerged as the de facto standard for directory access

Metadirectories: If you're out there, you're in here

By Barb Cole-Gomolski

NEW YORK LIFE CO. has gone where few have tread: It is rolling out to the entire company a metadirectory, which is like a central telephone book that lists every employee's E-mail address and other data.

MESSAGING MANAGEMENT

In fact, as soon as employees get a security badge, the corporate metadirectory knows who they are.

That is a far cry from the days when employees were listed in several E-mail and application directories that were hard to access and virtually impossible to keep in sync.

"We were spending a lot managing all those directories," said Jeffrey Denecke, a senior architect at the New York insurance company. The company's metadirectory is a centralized storehouse that culls information from E-mail systems and the corporate payroll system.

Metadirectories have been hyped for years and are seen as key to implementing electronic-commerce applications because they track security information.

"But they haven't been a high priority until now," said Jonathan Penn, an analyst at Ferris Research, Inc. in San Francisco. Penn said electronic-commerce applications will drive the push toward metadirectories, and the acceptance of the Lightweight Directory Access Protocol (LDAP) as the de facto standard for directory access will make them feasible.

"LDAP helps a lot," Denecke agreed. But there are a lot of applications, such as the payroll system, for which New York Life had to write custom programs to extract data, he said. "My one complaint is that there is a lack of tools" for building metadirectories, Denecke said.

That may explain why initial hardware and software costs were a mere $200,000 for New York Life's meta directory, yet the project will eventually top out at several million dollars. Three full-time information systems staffers have worked a year to bring the metadirectory up, Denecke said.

Based on the OpenDirectory DX Server from McLean, Va.-based Open Directory, Inc., New York Life's metadirectory holds telephone numbers, E-mail addresses, mailing addresses, security certificates and even photos of the company's 18,000 employees.

Information in the metadirectory is accessible from a World Wide Web browser and eventually will be linked to workflow and electronic-commerce applications. A corporate organizational chart is also part of the directory.

TWO PARTS

Denecke said the metadirectory project has been successful because he chopped the work into two distinct pieces — people issues and systems issues.

"We decided to deal with the people issues first," he said. That involved synchronizing information stored in multiple E-mail systems and gathering photos and security information.

Down the road, the company will link its metadirectory with its operating systems and use it in conjunction with systems management tools to manage hardware devices.

Even though the metadirectory was funded with money set aside to shore up information technology infrastructure, Denecke said he still had to sell divisions on the directory's value.

"You show them how much easier it will make their lives," Denecke said. "Some of them still look at you and ask why we are doing this." □

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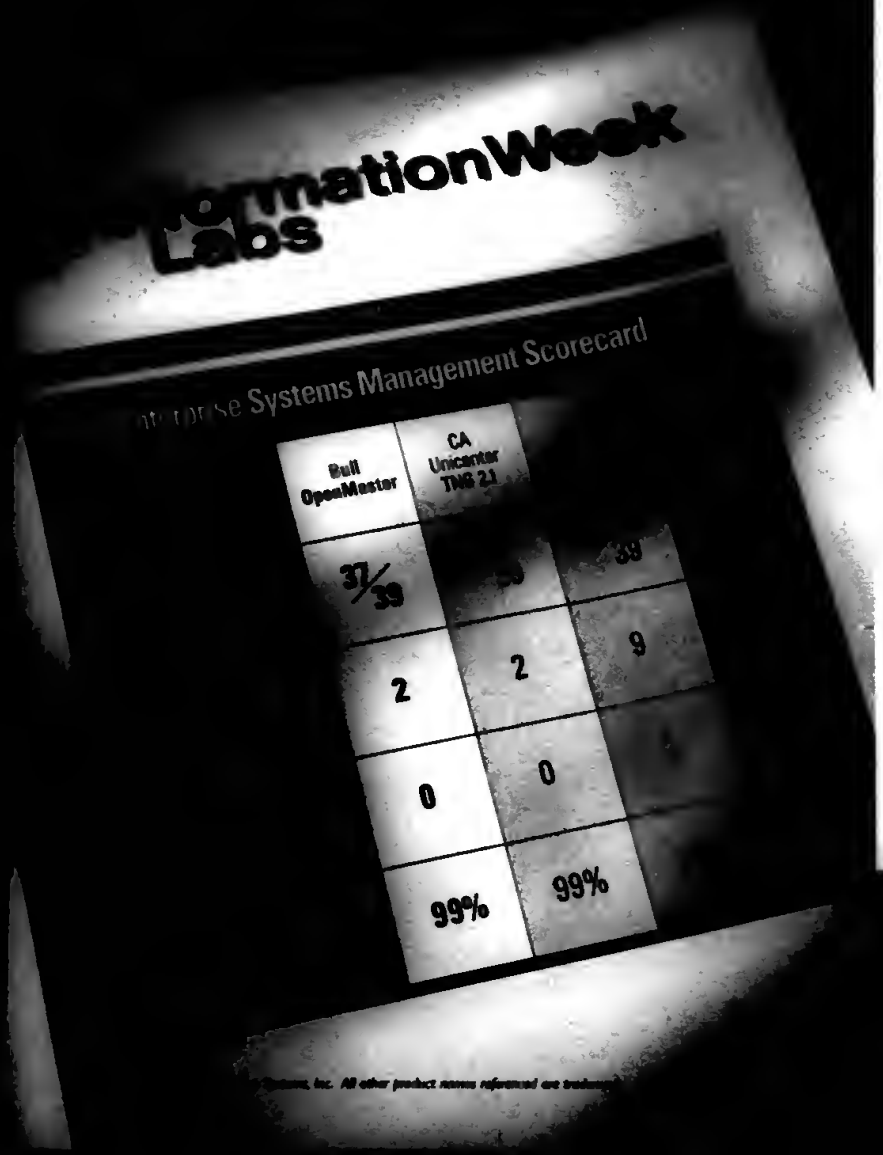

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EVERYTHING SYSTEMS

IBM jacks up processing power of RS/6000

By Jaikumar Vijayan

IF YOU THOUGHT 200 million calculations per second was fast try one billion.

That's the speed at which IBM's Deep Blue RS/6000 SP system would have computed its chess moves against grand master Gary Kasparov last year if it had featured some of the enhancements announced last week.

In a refresh of its high-end Unix server lineup, IBM introduced its fastest 332-MHz PowerPC 604E processor to the RS/6000 SP. The company added an upgraded version of the AIX operating system, a faster internal router for moving large chunks of data between the RS/6000 SP and external networks, and more software for Internet and PC connectivity.

"Quite simply, all this translates into much more processing power for the user," said Jerry Sheridan, an analyst at Dataquest in Mountain View, Calif.

Installed at nearly 4,000 customer sites worldwide, the SP system uses parallel processing technology to increase the scalability of servers. Starting with relatively small multiprocessor servers or "nodes," users can add or cluster nodes together as their application needs grow.

Before last week's announcement, RS/6000 SP nodes typically came in eight-processor configurations. IBM is introducing two- and four-processor nodes based on the 332-MHz chip. The new models are smaller than previous RS/6000s, and the increased chip speed — up from 200 MHz — means users can get improved performance for the same $150,000 entry price, IBM said.

Quad systems based on the new processor offer almost the same performance as eight-way systems that run older processors, and they cost about half as much, said Jeff Almoney, director of advanced information technologies at beta tester Penn State University in State College, Pa.

"Basically what you are getting is a blazing-fast system taking up half as much floor space as the previous system."
– Michael Quinn, Intermountain Health

"Basically what you are getting is a blazing-fast system taking up half as much floor space as the previous [eight-way] system," said Michael Quinn, Unix team manager at Intermountain Health Care in Salt Lake City. The health care provider plans to buy between three and six of the new servers by the third quarter, Quinn said.

SP servers were previously considered better suited to scientific and technical applications because of their number-crunching capabilities. But the SP server's speed and scalability are making it increasingly popular in commercial environments, too. Nearly half the shipments of the system are in commercial markets, said Rich Partridge, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y.

For example, Intermountain Health Care is running commercial applications such as payroll and a major investment analysis application on the RS/6000 SP. And Penn State uses it to host the university's E-mail system and for several technical applications. □

Hiring managers turn to video

By Tim Ouellette and Barb Cole-Gomolski

DESPERATE TO CAST their nets ever wider for qualified IT staff, some companies are turning to videoconferencing technology.

Users cite benefits such as reduced travel and accommodation costs and the ability to interview a wider range of recruits.

Videoconferencing interviews "will become increasingly popular because it's a hell of a lot cheaper than an $800 plane ticket," said Chip Perry, MIS director at The Pillsbury Co. in Minneapolis.

But users and market watchers said there are still hurdles to overcome before videoconferencing becomes a standard recruiting tool. Those include choppy images, patchy audio and lack of user acceptance.

Until the technology clears these obstacles, Pillsbury and other companies are doing video job interviews on an ad hoc, case-by-case basis.

Desktop videoconferencing sales will grow 70% this year. That will push the overall videoconferencing market to $5.1 billion in 2001 from its current $1 billion level, said Andrew Davis, analyst at Forward Concepts in Tempe, Ariz.

For example, Jo Bennet used videoconferencing to conduct a job search for Battalia Winston International, a search firm in New York, and finished the job on Christmas Eve. "It's quick and easy to arrange, and it saves you getting on crowded airplanes," Bennet said.

An average 1.5-hour videoconference costs about $500 for equipment rental, but the interview can be hampered by dropped audio packages and delayed speech, she said.

VIDEO INTERVIEWING

Pros

- Less costly than travel/hotel accomodations
- Recruiting company can interview more candidates
- Becoming more available on desktop PCs and at outlets such as Kinko's

Cons

- Gaps in conversation make it hard to conduct ad-hoc interviews
- Body language is hard to detect
- Some applicants may be put off by the idea, or unfamiliar with video technology

But for companies that use their own high-speed network equipment, the transmission speeds are fine for interviews, said Gus Otto, manager of videoconferencing at Caterpillar, Inc. in Peoria, Ill. Caterpillar conducts some job interviews with its videoconference facilities. Otto said. The company also rents the studio space at its 98 sites to outsiders interviewing for jobs elsewhere.

One vendor has even started to offer a desktop-based videoconferencing service geared for job hunting. ViewNet, Inc. in Madison, Wis., claims to have 75 company sites and 163 universities linked to its video interview network.

Setup costs $6,000, and the firm charges an annual service fee of $1,800.

AWKWARD PROCESS

But some recruits and recruiters still aren't comfortable with the technology and have trouble with nonverbal cues such as making eye contact when videoconferencing, said Andrew Davis, a research analyst at Forward Concepts in Tempe, Ariz.

For example, a 100-site videoconference network in Texas includes several colleges but has seen little job interviewing.

"Recruiting has not played a big part in our connection count," said Niki Harris, video network coordinator at the Trans-Texas Videoconference Network in College Station. "Over the past two years, we have probably had three students use the network for job interviews," she said. □

IBM gives Token Ring users breathing room

By Bob Wallace

SOME IBM SHOPS greeted with optimism news of the vendor's plans for high-speed Token Ring products, but they await the conspicuously absent pricing.

The products boost the amount of bandwidth available on Token Ring local-area networks from 16M to 100M bit/sec. That will finally give users a migration path to high-speed Token Ring networking.

IBM announced the 4/16/100 High-Speed Token Ring Peripheral Component Interconnect Adapter and a High-Speed Token Ring add-on for its Nways 8260 Hub, 8265 Asynchronous Transfer Mode Backbone Switch and 8270 LAN switch line. Also detailed were products that establish high-speed links to IBM S/390 mainframes. They will ship in the second quarter.

But the market may be limited because many users have moved to Ethernet technologies or are doing so now. That is because Ethernet is cheaper, has had higher-speed options for years and has been by far the center of product development by most vendors.

The Workers' Compensation Board of Alberta in Edmonton, Alberta, has stayed with Token Ring and was pleased to hear about IBM's faster Token Ring products.

"We need more bandwidth between switches and to servers," said Russ Ebbers, network manager at Workers Compensation Board. Ebbers said his agency has found that the use of PeopleSoft, Inc. applications and PC and server backups and software distribution programs increase network traffic. "I hope the [IBM] products do the job technically and are reasonably priced," he said.

Ebbers said he will wait until a standard for 100M bit/sec Token Ring is completed before implementing the technology. The standard could be ready by year's end.

Well-priced, fast Token Ring appeals strongly to John Arnold, chief technology officer at Edison Electric Institute, an industry trade association in Washington. "I keep telling IBM that if they want to salvage the Token Ring market they have to be extremely price competitive [with Ethernet]," Arnold said. "They've said they'd be price competitive, but we'll just have to wait."

Arnold said he will test IBM's products as soon as possible for use on the company's servers. □

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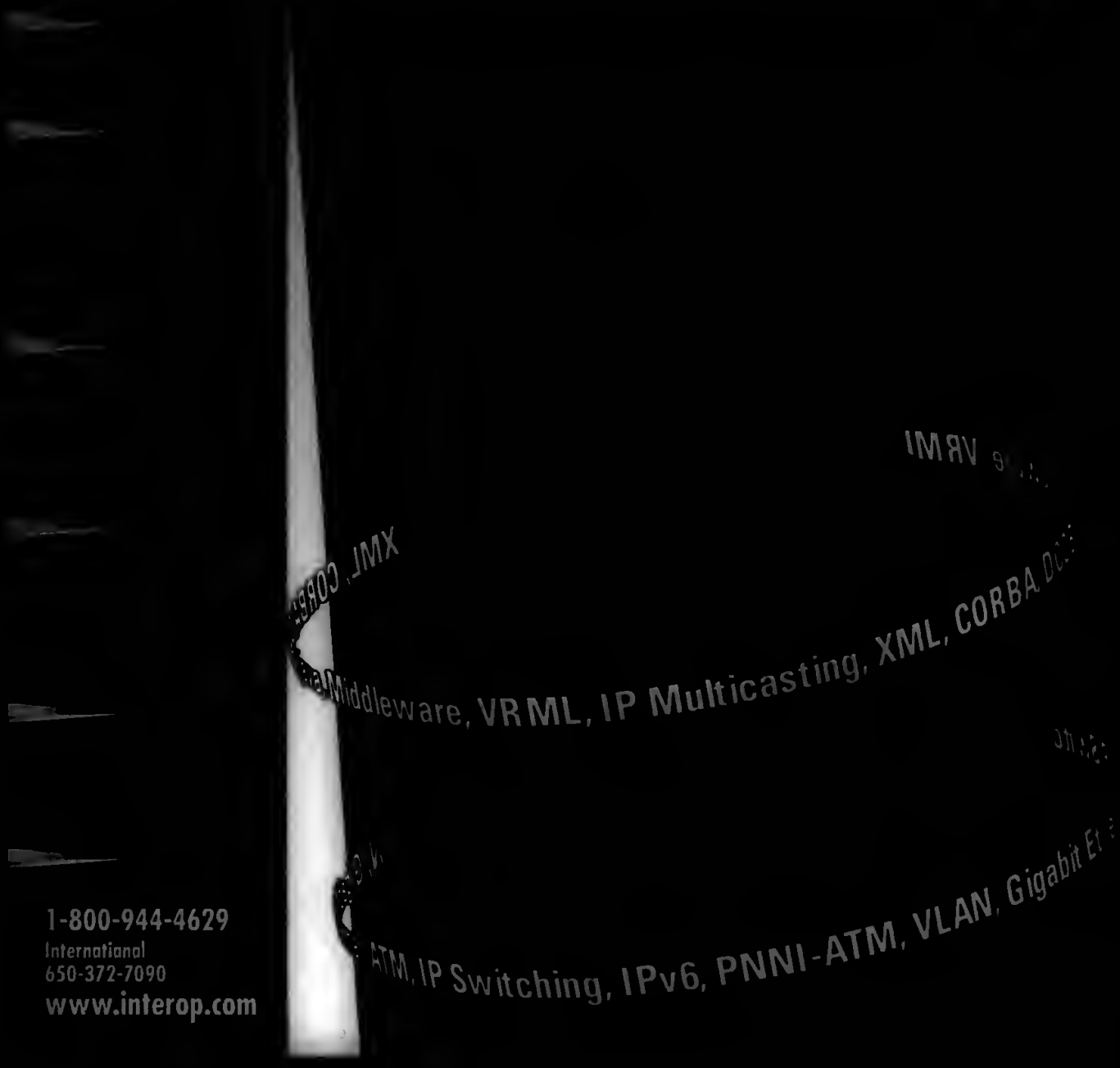

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Intranets

A MONTHLY LOOK AT WEB DEVELOPMENTS BEHIND THE FIREWALL

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FROM THE EDITORS OF

COMPUTERWORLD

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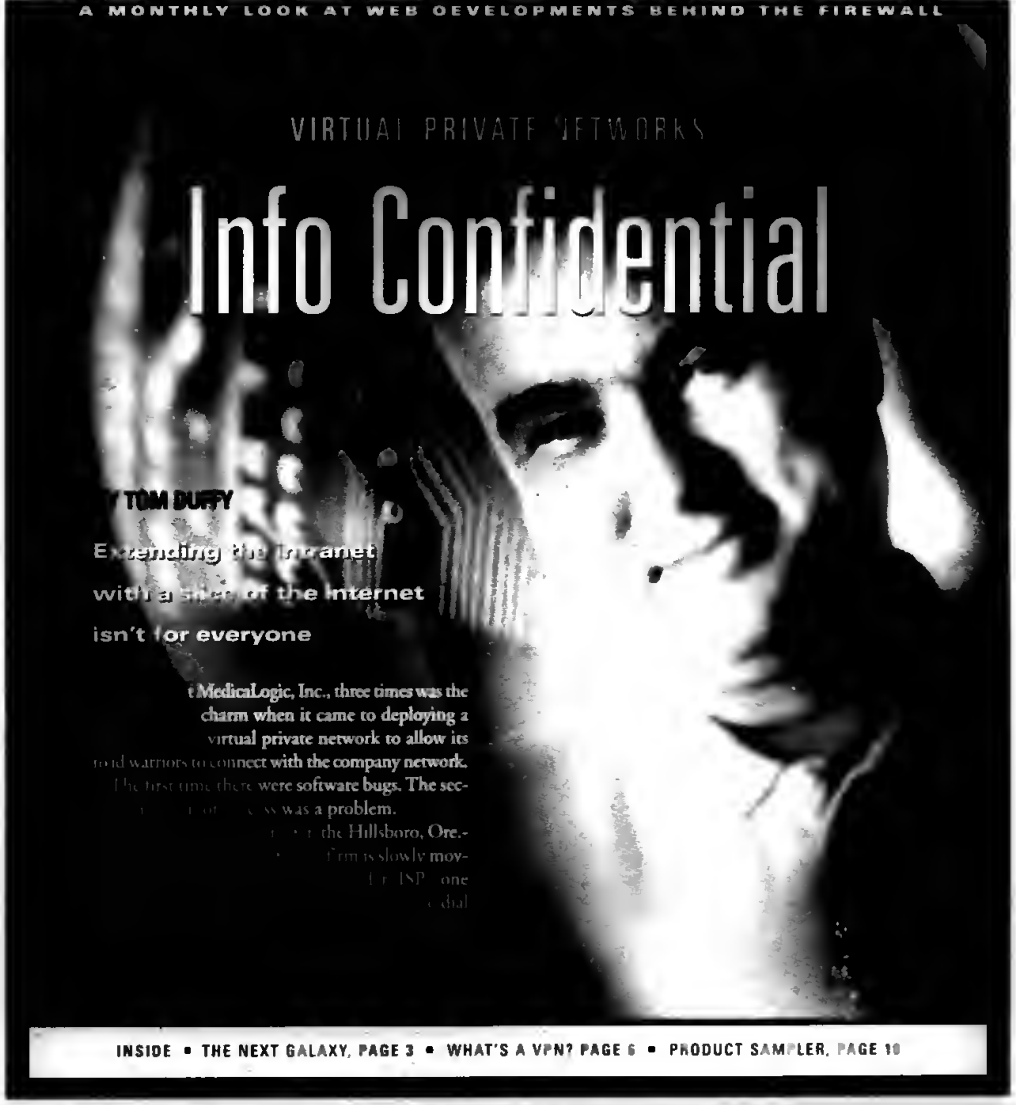
APRIL 27 1998

Intranets

A MONTHLY LOOK AT WEB DEVELOPMENTS BEHIND THE FIREWALL



VIRTUAL PRIVATE NETWORKS

Info Confidential

BY TOM DUFFY

Extending the Intranet with a slice of the Internet isn't for everyone

t MedicaLogic, Inc., three times was the charm when it came to deploying a virtual private network to allow its road warriors to connect with the company network. The first time there were software bugs. The second time it was a problem.

the Hillsboro, Ore.-firm is slowly moving ISP one dial

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VIRTUAL PRIVATE NETWORKS

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In other words, it has finally tapped the potential of virtual private networks (VPN) — that IP-based connectivity technology that allows data to be transported either over the backbone of a single ISP or across the broader Internet.

"We've gone through the early adopter pains," says Dennis Wilson, MedicaLogic's information systems manager. "But we remain convinced that it's going to pay off and that the cost savings to this kind of approach are real."

Wilson is not alone. Spending on VPN products, systems integration and ISP services is projected to grow from an estimated $205 million in 1997 to $11 billion in 2001, according to a 1997 report by San Jose, Calif.-based Infonetics Research, Inc.

That's because its promise is great: By taking advantage of the Internet, VPNs can significantly reduce the cost of transmitting data within and among businesses. Firms can connect via local points of presence and reduce their phone charges. And those VPNs operated and managed by ISPs can potentially simplify the management of security and other nettlesome information technology issues by pushing network oversight out to a third party.

"There's no doubt that Internet-based VPNs offer significant advantages in what I call cost-effective, flexible connectivity," says Dan Metriman, an analyst at Cambridge, Mass.-based Giga Information Group. "It's an easy way to establish connectivity without having the central management requitement that is there with frame relay or with a dial management structure."

Yet while the buzz about VPNs is intense, so is the confusion. Vendors report that customers are insisting they need a VPN deployed, even though they don't have a clue what one is or how it might help them.

Customers are baffled by not only the variety of applications for VPNs — intranet, extranet and remote — but also the plethora of methods of deploying them. VPNs can be established with a combination of firewall, security measures and management software or outsourced to ISPs (see story, page 6).

And barely more than a year old, VPNs are also subject to the growing pains of any new technology. Issues of interoperability, security and performance are still being worked out. As a result, companies that have deployed them report a wide variety of experience. Here's what some of them have found.

How to Evaluate VPNs

■ ASK TOUGH QUESTIONS about service-level guarantees. Some ISPs now guarantee availability in their contracts, though guarantees for latency and packet loss are not yet available. If ISPs don't meet these guarantees for several months in a row, some will refund a portion of monthly fees.

■ TEST THE VPN as much as possible with typical tasks and applications for which it will be used. Client/server database applications, for example, might have to be reconfigured to take into account variations in the speed of data transmission over the VPN.

■ CONSIDER A HYBRID SOLUTION. [illegible] are more cost-effective [illegible] applications than for others, companies with a frame-relay network should consider using a VPN for some applications and retaining the frame for others. Choices can be made by weighing concerns about security, reliability and relative cost.

■ DON'T TAKE AN ISP'S WORD on its performance. Test it yourself over a period of several months by Pinging (this is a standard Internet protocol) the host from a variety of locations to determine the path of the traffic, transmission speed of the data, packet loss and other critical information.

■ THINK ABOUT THE SKILLS and demands of your company. Does your company want to be responsible for managing the VPN and monitoring security — and for hiring and retaining those workers? Or would it be more comfortable off-loading those tasks to a third party?

MEDICALOGIC'S STORY

When MedicaLogic first looked at giving its 75 salespeople access to the company network, it quickly ruled out dial-up access as too expensive.

"If we went with the classic roomful of modems, the long-distance charges of connect time racks up a lot of money," says Dennis Wilson, MedicaLogic's IS manager. "That's tens of thousands of dollars a year. And with modem standards moving so quickly, there is an ongoing capital invest-

Continued on page 6

COVER PHOTOGRAPH BY REID HORN/ PHOTO ILLUSTRATION BY LOGAN SEALE

Galaxy Scientific Jettisons Into New World

Eager to build a national network but frustrated by the lack of options, Galaxy Scientific Corp. came within a week of spending about $160,000 to erect firewalls at six major sites as part of an Internet-based VPN.

But a week before it was to sign off on the plan, it found a fledgling service from an ISP that would allow the same connectivity at a fraction of the price.

The man who would have had to live with firewalls — and the bill — was Glenn Botkin. As manager of information services, he was tapped in late 1995 by Chief Executive Officer James Yeh to find a way to link Galaxy's 21 offices in a network that would cut transmission costs, improve productivity and facilitate collaboration among divisions.

For eight years, the $40 million technical services and systems integration firm, based in Egg Harbor, N.J., had been growing at a rapid clip. From its initial ground in the aviation industry, the firm had branched out to design and install computer systems for various industries. Its network didn't keep pace: Communication among different offices and with headquarters was done strictly by dial-up. Phone charges were running close to $8,000 per month. Without a network to speak of, collaboration was tough.

Botkin approached the job methodically. He drew up a list of requirements. First was corporatewide access to company information. Then came access to business-critical systems such as accounting. Botkin also wanted the network to provide access to E-mail over the Internet, rather than via a dial-up connection. Finally, the solution needed to embrace SS or as remote workers.

Botkin was ready to go with a system from Check Point that would require erecting firewalls and using TCP/IP for connectivity. At the time, he says, tunneling protocols such as PPTP and L2F were not yet available. The problem was the cost: $160,000 seemed prohibitive for a company Galaxy's size.

Then he heard about PSINet's Internet Service, which would link Galaxy's sites via PSINet's own backbone. While the network forms a part of the Internet, because PSINet's data packets never leave the ISP's portion, the vendor offers specific service-level guarantees, though it does not guarantee quality of service for things such as latency. Galaxy now connects to PSINet via permanent virtual circuits (PVC).

> **"WE THINK we more than justified the cost [of our VPN]."**
>
> **GLENN BOTKIN**
> **GALAXY SCIENTIFIC**

Because the data never leaves PSINet's backbone, data is not encrypted. But security is tight, according to PSINet spokesman Mike Blake. He says because data is switched rather than routed over its switch frame network, it's virtually impossible to hack into data traveling across the network.

Meanwhile, many of the management tasks are handled by PSINet. "They basically manage our security policy for us," Botkin says. "We say what kind of traffic we want coming in and out of each location and then we can monitor it to make sure that our instructions are implemented the way we intended."

The cost of the PVCs and a pair of ISDN lines for two smaller offices is about equal to the dial-up charges Galaxy was paying previously — $3,000 to $4,000 monthly — Botkin says. But the VPN is actually saving money, he adds, by enabling greater collaboration.

"We think we more than justified the cost by not having to make the up-front investment in firewalls and not having to do the continuous updating and management that we would have had to do with frame relay," he says.

As an example of the collaboration benefits the VPN enabled, he recalls that the firm recently put together a bid for a $300,000 contract in days by collaborating over the network. Before, he says, the collaboration would have required people to meet at a central location; meanwhile, data exchange would have been much slower.

"In our former life, before the network, we wouldn't have even tried it," he says.

— TOM DUFFY

PHOTOGRAPH BY LYNNE SILER

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Continued from page 2

ment cost that I wasn't looking forward to."

Now MedicaLogic is among the firms riding the first wave of VPN implementations. Early last year, MedicaLogic signed on with firewall vendor Check Point Software Technologies Ltd. in Redwood City, Calif., which provided a combination of firewall, software and other security measures to allow the company to deploy a VPN. However, Wilson says that persistent software bugs prevented him and his staff from even deploying the VPN for several months. (According to a spokesperson for Check Point, one of its licensed resellers attempted to help Wilson with the problems, but MedicaLogic eventually stopped returning the company's phone calls.)

Because the firm has a T1 Internet connection provided by UUNet Technologies, Inc., Wilson then chose to sign up with UUNet's VPN service, figuring that staying entirely within the ISP's backbone would have a positive impact on service. Unfortunately, he says, about 20% of his remote users began complaining about difficulty accessing the network, particularly in the heavy-use evening hours.

MedicaLogic began giving some of its remote users Netcom accounts, allowing salespeople the option of connecting to a second ISP. More recently, MedicaLogic has been slowly moving all of its accounts to IBM Internet Connection Services. Wilson says IBM's VPN service simplifies some management tasks. MedicaLogic can directly make password changes on individual accounts, for example, rather than submitting the requested changes to the service provider.

Deploying a VPN turned out to be the most cost-effective alternative for MedicaLogic. The cost savings over running a modem bank is "in the tens of thousands of dollars," Wilson says. But analysts caution that is not always the case.

"Are VPNs cheaper than private lines?" asks Eric Paulak, Internet analyst at Gartner Group, Inc. in Stamford, Conn. "Absolutely. Than frame relay? Maybe not. In some cases, frame relay in North America can be much cheaper."

LOOKING TO SAVE

Frame relay is what The MacManus Group spent millions of dollars on annually until last year to connect its 35 offices in North America as well as offices in Hong Kong and London. The network is used for everything from electronic mail to digitized, broadcast-quality commercials, as well as to give customers such as consumer products giant Procter & Gamble Co. access to a library of advertisements.

Looking for a less expensive way to connect the overseas offices and eager to bring 65 other foreign offices online, the San Francisco-based ad agency decided to deploy a VPN.

"I anticipated unreliable Internet service," says Craig Metzler, regional director for information technology at The MacManus Group who oversaw the VPN implementation. "But I find the Internet is just as reliable as the frame is."

Metzler says the company was more comfortable running its own firewalls and encrypting the data itself than

So What Is a VPN, Anyway?

Perhaps you've heard a quick pitch from a couple of vendors or talked about them during a long-term strategy session. You know that virtual private networks (VPN) might save you money by helping your firm make better use of the Internet.

But the truth is, if anyone cornered you at the water cooler and asked, "What is a VPN?" you'd have a hard time giving him an intelligible answer.

You'd have plenty of company.

"You can ask 10 different networking people and get 10 different answers about what a VPN is," says Tom Brugman, associate product manager at Purchase, N.Y.-based AT&T Communications, Inc., a VPN provider. "We all have our own dispositions as to what we believe defines a VPN."

So what are VPNs?

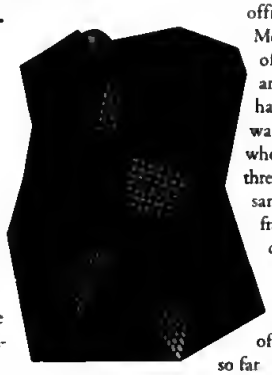
They are essentially an IP-based connectivity technology. Think of them as an updated version of value-added networks deployed over the Internet. What leads to confusion is the wide variety of ways in which they can be implemented.

VPNs can be software- or hardware-based or some combination of both. They can be managed internally and deployed via the Internet or be provided and managed by ISPs. They can be used to connect branch offices within a company, to link up with business partners or to give remote users access to the company network.

At their simplest level, VPNs allow data to be transported over the Internet via a tunneling protocol such as Microsoft Corp.'s PPTP or Cisco

"I ANTICIPATED unreliable Internet service. But I find the Internet is just as reliable as the frame is."

**CRAIG METZLER
THE MACMANUS GROUP**



outsourcing the work to an ISP. Check Point provided the firewalls, management software and other security measures.

"Unless that ISP has armed guards standing along the entire length of its cables, there is nothing to stop anyone from tapping into those lines," he says. "This way it's encrypted with our keys so nobody can track it. We literally control the traffic from the minute it leaves our walls."

The cost savings have been the most substantial in connecting the London and Hong Kong offices. Metzler says that in the case of Hong Kong, the firm is saving about $30,000 annually. For North American offices, however, Metzler says the cost of erecting a firewall and deploying the hardware and software to go with it, when amortized over three years, is about the same as the cost of a frame connection, so connecting them isn't as high a priority. About one-third of the offices are connected so far.

"Long term, we probably will connect more and more offices in North America up to the VPN," he says.

PLENTY OF HOLDOUTS

Despite accolades from the likes of Metzler, many firms are waiting on the VPN sidelines for some of the hype to subside. Among those is Sega of America, based in Redwood City, Calif.

"We've been thinking about VPNs because everyone else is saying that it's the way to go," says James Fowler, Sega's network administrator. "For now, though, we're sitting back on the sidelines and seeing what everyone else is doing with it."

Sega currently has a private network connection to its parent company in Japan and a sister firm in Europe. Road warriors link up with Redwood City via a dial-up connection over frame relay or leased lines. Fowler says his firm was attracted by the potential cost savings that VPN providers touted, though he questioned the adequacy of security. While security concerns could probably be solved through encryption, that in turn might affect network performance.

"You're talking extra CPU cycles from the client machine to encode the information," he says. "Then you have the additional overhead on the other end to decode it. On a 28.8K bit/sec. modem, how much of an impact is that going to have?"

Potential users are right to question the kind of security that VPNs provide, according to Scott Bradner, a senior technical consultant at Harvard University in Cambridge, Mass., and a member of the Internet Engineering Task Force.

"People are buying encrypted VPNs because they give them this secure-from-the-world environment," Bradner says. "But if one looks at the Internet world, the majority of security issues are with local people that would be inside the firewall and inside encrypted tunnels. The environment they really need to be secure from is their own."

Security was at the forefront of Bruce Bartolf's concerns when he began exploring the possibility of deploying a VPN as vice president of IS at M. Arthur Gensler Jr. and Associates, Inc. But so was bringing

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Systems, Inc.'s L2F. Indeed, all a user would need to set up a rudimentary, nonsecure VPN would be Windows 95, which supports PPTP; an Internet connection; and a recipient whose system also supports PPTP.

Firewall vendors such as Raptor Systems, Inc. in Waltham, Mass., and Check Point Software Technologies offer VPNs that are essentially firewalls in combination with a variety of security measures and management tools.

A number of ISPs offer VPNs under a variety of trade names. (Some don't call their offerings VPNs, even though that's what their customers call them. For example, PSINet calls its service PSI InterNet.)

These VPNs typically transport data entirely within the ISP's backbone rather than across the wider Internet — an approach they boast enhances performance.

Given the complexities of the VPN marketplace, users caution future VPN buyers to be savvy consumers and not sit back and accept whatever the vendor tells them.

"Understand what you are buying in relation to what you actually need," says Craig Metzler, regional director for information technology at The MacManus Group, a San Francisco-based advertising firm. "Ask the tough questions. Don't just assume the answer is the answer."

—TOM DUFFY

ILLUSTRATIONS BY STEVE SCHLOBACH

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together the firm's 1,300 architects, who at any given time might be working on projects in New York, Chicago, London, Hong Kong or Jakarta, Indonesia.

Bartolf chose a VPN product from Pilot Network Services, Inc. in Alameda, Calif. With Pilot's product, Gensler can use any ISP it wants. But all transmissions pass through a Pilot-operated firewall before being sent on to their final destination.

MIXED REVIEW

Through no fault of Pilot's, Gensler's experience with VPNs has been mixed, according to Bartolf.

On the positive side, the VPN allows architects, who might operate out of construction site trailers for months, to connect to the wide-area network without Gensler's having to establish a frame-relay connection, as it did in the past.

And transmission of its documents, typically computer-aided design files between 7M and 10M bytes, is not appreciably slower than it was via frame relay. "We're not the average user," Bartolf says. "Sometimes we're sending 4-ft by 18-ft, 24-bit color posters."

Gensler has discovered, however, that the Internet is not always reliable when remote users are connecting to time-sensitive applications on the company network. The firm attempted to roll out an Oracle Corp.-based billing application but found that the servers often timed out while the information the user had requested was being passed back to him.

To solve the problem, Gensler has decided to redesign the database by off-loading processing chores from the client to the server and by building an HTML front end.

Bartolf admits he's not sure the solution will work, but he figures that's the nature of VPNs. It's a new technology, and while it might have great benefits to offer, it remains somewhat unpredictable. Analysts say that as the VPN market matures, things will only improve. Some ISPs are beginning to offer improved quality of service guarantees, such as allowing customers to pay for a higher-priority level that would allow their data to move more quickly during periods of congestion. But guarantees for throughput, latency and packet loss are still several years away.

"It is pretty exciting," Gartner Group's Paulak says. "But it's still a best-effort technology."

Duffy is a freelance writer in Somerville, Mass.

Product Sampler

VPN vendors can be broken down into two general categories: ISPs, which manage VPNs for their customers on an outsourcing basis, and hardware and software companies, which provide a combination of firewalls, management, connectivity and security measures. They include the following:

Internet Service Providers

ANS Communications, Inc.
100 Manhattanville Road
Purchase, N.Y.
(914) 701-5440
www.ans.net

CompuServe Network Services
5000 Britton Road
Hilliard, Ohio
(800) 433-6388
www.compuserve.net

GTE Internetworking
150 Cambridgepark Drive
Cambridge, Mass.
(800) 472-4565
www.bbn.com

IBM Software Group
Route 100
Somers, N.Y.
(914) 765-1423
www.software.ibm.com

Pilot Network Services, Inc.
1099 Marina Village Parkway
Alameda, Calif.
(510) 433-7600
www.pilot.net

PSINet, Inc.
510 Huntmar Park Drive
Herndon, Va.
(703) 904-4100
www.psi.net

UUNet Technologies, Inc.
3060 Williams Drive
Fairfax, Va.
(800) 488-6383
www.uu.net

Software VPN Provider

Check Point Software Technologies Ltd.
400 Seaport Court
Redwood City, Calif.
(800) 882-4000
www.checkpoint.com

PROJECT: FILENET CORP.

VPN Speeds Traffic Among Scattered Sites

By Steve Alexander

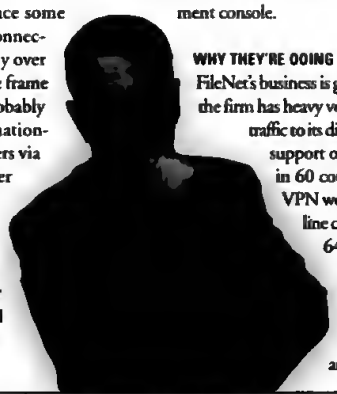
FileNet Corp., a Costa Mesa, Calif., vendor of workflow, document imaging and other software, hopes to replace private leased lines and frame-relay connections with a faster virtual private network (VPN).

Following testing, the firm expects to set up a VPN link to the company's Chicago office. Initial rollout to other offices — up to six in the U.S. and nine abroad — will probably begin with sites where FileNet currently lacks wide-area network connectivity, such as Singapore and Tokyo. By the second half of 1998, FileNet expects to replace dial-in remote access for laptop users with VPN access.

Mike McCoy, FileNet's director of MIS, explains the VPN rollout, which he expects will be transparent to the more than 1,500 FileNet employees.

WHAT THE VPN REPLACES

The VPN will replace some of FileNet's WAN connections, made primarily over leased lines and some frame relay. FileNet will probably link its major international sites to headquarters via the VPN, but smaller offices in other countries will likely continue to use private lines because the difference in cost isn't large enough to make the move worthwhile.



FileNet's MIKE MCCOY: Look at your potential partner and make sure it knows what it's doing

WHAT IT WILL CARRY

The VPN will carry electronic mail (Microsoft Corp.'s Exchange), SAP AG business software, FileNet integrated document management software and phone calls. Current plans call for implementing data applications first and voice in the third quarter.

SAVINGS

Total savings of 20% to 25% are expected annually, though actual savings may vary by site.

OTHER BENEFITS

Added benefits include bringing up additional network links more easily via local Internet service providers (ISP) and setting up extranets. VPN connections require only that the customer have an Internet connection and a special encryption device. Connection to the extranet could be enabled at FileNet's management console.

WHY THEY'RE DOING IT

FileNet's business is growing, and the firm has heavy voice and data traffic to its direct sales and support organizations in 60 countries. The VPN would increase line capacity from 64K to 256K bits, relieving bandwidth restrictions and enabling more document-sharing applications in the future.

HOW THEY'RE DOING IT

Fiberlink Communications Corp. in Blue Bell, Pa., a systems integrator, is providing the VPN. Fiberlink has contracted for ISP services from UUNet and has bought VPN software and hardware from VPNet Technologies, Inc. The VPNet products include a security device that connects FileNet's enterprise LAN to the WAN (providing security and management functions), a tool suite for installing, configuring and monitoring the VPN, and remote client software for laptops.

HOW THEY RATE

For the full interview with Mike McCoy plus RealAudio clips, visit
www.computerworld.com/intranets

TECHNICAL CHALLENGES

One hurdle is making sure the VPN security devices work with FileNet's routers and firewalls. Others include disabling network nodes on the VPN if there is a security breach and ensuring the ISDN backup lines work well with the VPN.

COSTS

The initial investment in hardware and first-year operating costs comes to $200,000, plus an $85,000 annual cost for hardware maintenance and operating expenses.

ADVICE TO OTHERS

Look at your potential partner, whether it's an integrator or an ISP, and make sure it knows what it's doing. That's the key, unless you want to do a VPN all by yourself — and you don't.

Alexander is a freelance writer in Edina, Minn.

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COMPUTERWORLD

QUICK STUDY

Hot trends & technologies in brief

64-bit computing

DEFINITION: A CPU's ability to address data depends on how many bits it can handle at one time. In a 32-bit environment, such as a Pentium processor, the CPU can handle 32 bits. With 64-bit technology, such as the IA-64 chip, due out early next year, the CPU's capability doubles, increasing the amount of data the processor can handle within one clock cycle. Applications and operating systems can be optimized for a 64-bit hardware architecture.

Architecture's promise of better performance will take a while

By April Jacobs

IT MAY BE FAR OFF in the future, but 64-bit computing will one day hold the same promise that 32-bit architecture does today. The technology will provide higher scalability and better performance. It also will allow for more powerful applications.

Analysts say 64-bit computing will likely be in the mainstream by the year 2002, when operating systems and applications will be widely available.

According to Roger Kay, an analyst at International Data Corp. in Framingham, Mass., 64-bit computing will give users more powerful hardware and better application performance. Sixty-four-bit processors are billions of times more powerful than their 32-bit counterparts. For example, a 64-bit processor can handle more than 4 billion times more addresses than a 32-bit CPU.

AT ISSUE

Not a reality until 2002.

SOME SYSTEMS ARE HERE

There are Unix offerings already on the market, including Digital Equipment Corp.'s Alpha-based system, which can run 64-bit Digital Unix. Hewlett-Packard Co. and Silicon Graphics, Inc. also have 64-bit Unix systems.

Early adopters of 64-bit technology will likely use it for data warehouses and other types of database work. A 64-bit chip's ability to hold more memory makes it optimal for use in that arena, says Tom Henkel, an analyst at Gartner Group, Inc. in Stamford, Conn.

The key to higher performance is the 64-bit processor's ability to address twice the amount of data per cycle, 64 bits, to be exact. The 64-bit processors also can take advantage of faster applications than their 32-bit counterparts.

INTEL'S PART

And Intel Corp. is helping to bring 64-bit to the desktop with its IA-64-based Merced chip, which is due out early next year.

Analysts agree that the first Windows-based operating system to be 64-bit will be the version that appears after Windows NT 5.0, with applications following soon after. Microsoft officials say NT 5.0 will ship at the end of this year. That first 64-bit version will likely have backward compatibility with 32-bit systems, much as Windows 95 has backward compatibility with 16-bit applications.

Software is key. Users can run 32-bit applications on 64-bit systems with varying degrees of success. But unless the software is optimized to take advantage of the processor's 64-bit instruction set, performance will suffer, says John Dunkle, president of Workgroup Strategic Services, Inc. in Portsmouth, N.H. □

QUICK STUDY ONLINE

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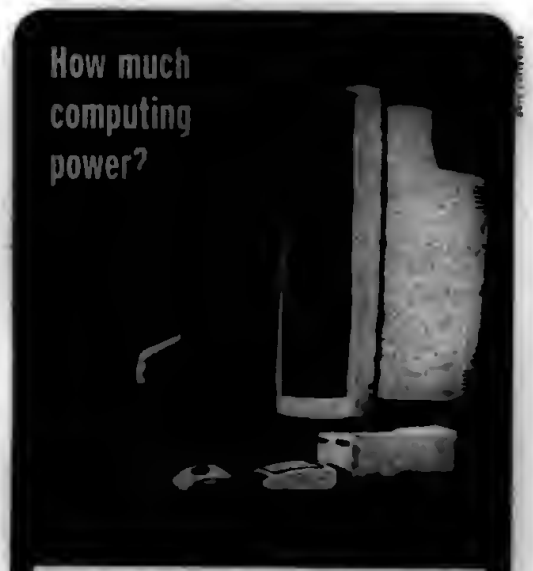

Chip	Addresses	About how big that really is
8-bit	256	About 10 times larger than our alphabet
16-bit	65,536	Population of a midsize city
32-bit	4.3 billion	Total adult population in the world
64-bit	18 quintillion	Grains of sand at a large beach

Source: International Data Corp., Framingham, Mass.

CURRENT 64-BIT OFFERINGS

	DIGITAL	HEWLETT PACKARD	IBM	Silicon Graphics
Vendor	Digital Equipment Corp.	Hewlett-Packard Co.	IBM	Silicon Graphics, Inc.
Chip	Alpha	PA RISC 8000	PowerPC	Mips
Operating system	Digital Unix	HP-UX 11.0	AIX 4.3, OS/400 and OS/390	Irix

Users looking at 64-bit systems should consider:

64-bit tips

- **The reasons for moving to a 64-bit system. See which users will best take advantage of the technology. Most users don't need the power of 64-bit computing yet.**
- **The consequences if you run 32-bit applications on 64-bit hardware. Test performance first because unless an application is optimized to take advantage of 64-bit systems, the benefits may not match the cost or hassles of upgrading.**
- **The availability of applications and operating systems. Most 64-bit offerings won't be widespread until at least 2002.**

■ *Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at stefanie_mccann@cw.com*

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OPINION

Triple threat

My very Irish grandmother was convinced that bad things come in threes. Good things? Well, talking too much about those would bring the Angel of Death to your window. So when it occurred to me last week that IT managers have a trio of megatrends ruling their working lives, I thought 'Uh-oh.'

I tested the theory of threes on several IT folks I came across in my travels. Like most of my grandmother's convictions, the theory got a few laughs. But everyone also agreed that any one of this trio — the Web, the year 2000 threat and the IT staffing shortage — can be counted on to have a strong and sometimes startling impact on their companies.

Consider the Web's unexpected power to transform a business. A recent convert to this conviction is Bill Merriam, vice president of information systems at

Someday Isle Toys in Brattleboro, Vt. The small specialty toy store last fall faced certain demise because of a saturated market and sliding revenue.

So in a last-ditch, save-the-business project, Merriam and a few co-workers raced to create an online toy store (*www.somedayisle.com*) in time for the Christmas 1997 sales season. They discovered an entirely new market overseas, built repeat customer business with Vermont tourists and even discovered better ways to track inventory. The Economic Angel of Death moved along.

The year 2000 threat also is refocusing business and technology attention like never before. The chief technology officer at a Houston oil company told me how his firm is targeting its major year 2000 initiatives only at "burning platform" issues. In the oil business, the worst thing that can happen is a fire on an offshore oil platform. So the first thing managers ask is: "Do we have a platform on fire?" The Millennium Angel of Death definitely qualifies.

Finally, I heard a lot of lamenting about raiding of IT staffs by vendors and consulting firms. Even perfectly contented technologists are being lured away. "They just keep coming back at you with better and better offers," one systems manager said. Score one more for the Recruiting Angel of Death. And OK, score another one for my grandmother, too.

Maryfran Johnson, *executive editor*
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LETTERS

Brand names have an effect

Don Tapscott revealed the perils of predicting the future of brands with one's head immersed too deeply in technology ["Beyond brand. The future of marketing," CW, Feb 9]. He describes two siblings who look for a family car by going onto the Internet and who decide on a Volvo. Given the unlikely scenario of these kids searching for "auto+ family," I would argue they selected the Volvo based 100% on brand.

Brand has always been [part of] a relationship. And now that the power is shifting to the buyer side, that doesn't mean one-way brand messages have no place. As long as brands morph from promises laid out by faceless corporations ("We'll solve all your networking problems" is my favorite) to stories that are interesting and human ("Bill Gates never graduated from Harvard"), people will listen.

As long as brands morph from promises to stories that are interesting, people will listen.

Carol Holding
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Mistaken freedom

Frank Hayes' column in your March 9 issue ["Friendly fire for Gates"] suddenly reminded me of an ant colony living in an ant farm. The ants believe they have the freedom to tunnel anywhere in the world. They are blissfully unaware of the limits placed upon them by an outside force. The outsider who actually controls this freedom knows better.

One day the owner of the ant farm decides it isn't worth the time and effort to maintain the farm any longer. Then as the soil in the farm has its moisture and nutrients depleted, the ants attempt to move on. They may even be able to see through the transparent walls of the farm a fresh environment into which they would love to move.

Unfortunately, they realize too late the illusory nature of their freedom, and the colony dies.

John Zielinski
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The policy, not tool, is bad

In a March 16 article, *Computerworld* stated that the Center for Democracy and Technology "opposes" Hewlett-Packard's VerSecure product ["Governing public-key encryption," QuickStudy, CW, March 16]. That mischaracterizes our view. The public policy and civil liberties issues at stake in the encryption debate go far beyond any particular product.

We believe it is wrong as a matter of policy for governments to require key recovery with any encryption product. If a government required VerSecure or any other product to operate with key recovery, we would oppose that action.

Jim Dempsey
Center for Democracy and Technology
Washington
www.cdt.org/

'Heritage' better describes, celebrates legacy systems

Computerworld's Jargon Judge column in the March 30 issue caught my eye. I am maintaining some "legacy" systems now along with my SAP assignment. I believe I read an article in *Computerworld* in which the author was suggesting that the word "heritage" be used to describe those systems that had been critical to running the business. Indeed, the term "legacy systems" has developed a negative meaning with people thinking of spaghetti Cobol code and ISAM files. Most of the legacy systems I have maintained (and developed) were state-of-the-art systems in their time. I think using the word "heritage" to describe those systems is a great idea. It has a sense of history that signifies [the systems'] importance and dignity in our corporate and business cultures. These heritage systems were a significant element in the formation of the current Information Age. They should be celebrated for their contributions.

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***Computerworld* welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.**

Washington's latest power grab

Steve Forbes

Politicos can no more resist involving themselves in successful industries than bears can resist honey.

The IT industry should watch its back. It has become an irresistible target, thanks to the fantastic wealth it has created. Equity prices are skyrocketing. Entrepreneurs are fast becoming millionaires and billionaires. This boom is occurring without Washington's permission or knowledge, and that irks politicians to no end.

IT has created fantastic wealth without politicians' permission or knowledge, and that irks them to no end.

If we're to realize the fabulous potential of technology, believers in free enterprise must prepare to battle the Beltway. Government is resorting to its most potent tool, taxation, to exert control and exact tribute. This month, the Federal Communications Commission proposed network access fees for some companies that provide telephone service over the Internet. And the overseers of about 30,000 state and local taxing authorities are drooling over the unlimited possibilities in the explosive amount of commerce being conducted via the Internet. For the moment, there's a tax moratorium on Internet commerce — but never underestimate a rapacious government.

The government's harassment of Microsoft and Intel is just part of the power grab. There's other evidence of growing political involvement and interference. Politicians and regulators are using people's legitimate fears of crime and terrorism to wrest control of encryption technology; they're trying to use the year 2000 problem to extend their sway; and the FCC has decreed a special "charge" on telephone companies — passed on to users — ostensibly to pay for connecting all classrooms to the Internet.

The idea of "universal service," whereby the government spreads the fruits of technology, is preposterous. The free market will do that faster and more extensively than Washington ever could.

The assault on Microsoft and Intel in the name of managed competition and fairness is absurd. What bureaucrats don't understand is that people and companies make mistakes in the course of business. For a company to be successful, mistakes must be corrected, or the market will pass it by. Washington portrays Microsoft as a juggernaut, but the software giant is hardly invulnerable, a case in point being its blindness to the significance of the Internet a few years ago. It had to scramble or lose crucial market share.

Nor is Intel trouble-free. First-quarter revenue was down 7%, and Intel missed the market for low-price computers and convergence devices and was left playing catch-up. Left alone, market forces create the level playing field so desired by bureaucrats and big-company critics.

The technology community must keep the political barbarians at bay. Remember the Department of Justice's antitrust suit against IBM? The company was so distracted by depositions, testimony and never-ending demands for documents that it nearly wound up in the corporate graveyard. Lawsuits sap the energies of corporations, diverting management brainpower from focusing on the innovations needed to compete and prosper.

To thrive, IT must be independent of hungry politicians. Regulations and taxes translate into less freedom, higher prices and inferior products. In this information age, people expect easy access to the latest technology and the products it spawns. One of the industry's most powerful weapons is its customers. If politicians are perceived to be regulating against customer interests and retarding technological advance, the power of the public can be marshaled and felt.

We are at a critical juncture. While the technology industry focuses its energies on creativity, it can't afford to ignore the dangers of regulation and taxation. □

Forbes is president and CEO of Forbes, Inc. and editor in chief of Forbes.

IT and the Citigroup gamble

Michael Schrage

The proposed gigamerger of Citicorp and Travelers Group deserves every ounce of scrutiny and attention it gets.

It's difficult to understate the potential enormity of this deal and its potential impact on global finance. The WorldCom/MCI deal suddenly feels like loose change jangling in the pocket of the information economy.

For computerdom, though, that hyperbole understates the real significance of this Citigroup convergence. Make no mistake: There's never been a business deal whose success so utterly, completely and totally depends on digital technology. Never. This merger will become the biggest management experiment in the history of the world. Citigroup becomes the (virtual) model for every company that believes the future belongs to economies of scale.

To read the Wall Street "smart money" analysis, which asserts that the key to the merger's success is how well Citicorp's John Reed and Travelers' Sandy Weill get along, is to laugh. They could fall madly in love, become godfathers to each other's children and creatively collaborate up the wazoo. Alas, it wouldn't make a Pentium's worth of difference to Citigroup's aspirations if the company can't swiftly and cost-effectively integrate its disparate systems.

There's no industry more information-intensive and network-dependent than finance in all its forms and forums. Consequently, Citigroup radically ups expectations of what tomorrow's digital nervous systems might look like.

Citigroup is a multibillion-dollar bet on a simple premise: Technology will guarantee that economies of scale will prove significantly greater than the costs of coordination. Citigroup's CEOs are gambling — excuse me, are confident — that their new information infrastructures will let them creatively bundle cross-selling opportunities, design and track billion-dollar trades in real time and oversee their sprawling "humanetworks" of traders, bankers, salespeople, analysts and quants at costs that'll let them capture market and margin share.

That's a risky bet.

Digital networks are wonderfully versatile media. The same intranets that let organizations decentralize decision-making can be instantaneously used to recentralize oversight and operations. When you create the biggest financial institution in the world, is it smarter to decor re-centralize? Do you strive for seamlessness across insurance, consumer credit, mutual funds, private banking and research? Or do you carefully regulate network access to restrict access? Do you rewrite your incentive structure software to encourage cross-selling of financial products and services? Or do you create internal markets within the firm to encourage alliances to be self-organizing?

There's never been a deal whose success so depends on digital technology.

For a Citigroup, each of those questions creates a multibillion-dollar trade-off. The network media and distributed computation can certainly slash the costs of coordinating information and transactions across the enterprise. Yet as an organization tries to reconcile its different values and cultures across subsidiaries, seeming economies of scale can turn into coefficients of friction.

So does anyone doubt we'll see massive layoffs as Citigroup's newly empowered nerds are tasked with substituting digital capital for human capital for leverage? Does anyone doubt that the Andersens, EDSs and CSCs of the world will have to wipe the drool off their chins as the world's biggest financial company tries to load the digital dice on its high-tech bet?

If Citigroup's gamble pays off, technology becomes the single dominant driver of organizational consolidation and redesign for the next 20 years. And if not . . . ? □

Schrage is a research associate at the MIT Media Lab and author of No More Teams! *His Internet address is schrage@media.mit.edu.*

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This year's news: Good computers, cheap

John Gantz

In the frenetic PC arena, it can be hard to track major market movements. It's a little like searching for the effects of El Nino in the Bermuda Triangle. International Data Corp. (IDC) has charted two major changes in the market since the decade began.

The first was the change in vendor pricing and business models that began in 1992, when Intel slashed chip prices and Compaq decided to master volume production. That led to a 50 million-unit-per-year increase in PC shipments from 1992 to 1997.

The sub-$1,000 PC will have a profound effect on corporate deployment.

The major effect was simple proliferation: there now is more than one PC for every white-collar worker. The world migrated to Windows and Office suites, and everyone became computer-literate, but there were no major discontinuities in buying or behavior.

The second change in the market is taking place now. It's actually the result of a complex interaction among the rise of the direct sales model, the saturation of the business market and a dearth of major software upgrades. But the major manifestation of the change is the appearance of the sub-$1,000 PC.

Accounting for just 7% of U.S. PC unit sales in 1996, sub-$1,000 PCs accounted for 14% last year.

By 2002, they will account for 40%. PCs that cost less than $1,500 will account for 75% of unit shipments in 2002 and will drive another sales run-up, this time of 60 million units per year. Originally confined to the consumer market, sub-$1,000 desktop PCs (and sub-$1,500 notebook PCs) will hit the commercial market big-time this year. The influx may have a profound effect on the purchase and deployment of PCs.

I've tracked corporate use of PCs for more than 20 years, and spending on hardware and software per desktop has always stayed about the same: $3,000. It's as if the figure were burned into budgets or something.

Companies would allocate that much for a new PC, and IS managers or end users would always buy up, getting as much performance as they could for that amount of money.

LOTS OF HEADROOM

That "spend-up" philosophy is about to change to "buy-down." IS must no longer buy top-of-the-line PCs to guard against obsolescence.

The new low-cost computers aren't older cast-offs; they've got plenty of headroom for new applications. With more and more processing being done at the server, it no longer makes sense to buy Cadillac PCs to do Ford tasks.

True, the actual cost of desktop (or laptop) computing isn't in the hardware, but in operations. But that doesn't mean IS should squander $1,000 per seat for hardware that users won't need.

Among vendors, the price war will continue; even vendors such as Dell (which so far is avoiding the product category) may be dragged in.

The commercial market is untapped territory. Sometime this year, most organizations will have to analyze their PC purchase strategies and incorporate sub-$1,000 configurations into them.

It will take some proselytizing to convince users that cheap computers can do the work, and there may be politics to play over the budget savings, but I think the $3,000-per-seat barrier will be permanently broken this year. Maybe the money saved can be used on year 2000 projects.

The good news for IS is that you'll now have a legitimate low-cost configuration to play with.

The bad news is that you'll need better forecasting of future use to deploy low-cost computers wisely. □

Gantz is senior vice president at IDC in Framingham, Mass. His Internet address is jgantz@idcresearch.com.

Of big lies, big lessons and Big Tobacco

David Moschella

Nobody smokes in Redmond, and those who do don't want to talk about it. Few ideas are more abhorrent to the folks at Microsoft than the suggestion that what's happening to the tobacco industry today might well be a preview of what the company will face tomorrow.

That denial is too bad; if Microsoft could learn from Big Tobacco's big mistakes, it might spare itself all manner of future trouble.

Let's start with the most obvious parallel. Bill Gates' claim that Microsoft doesn't have a monopoly on PC operating system software is the modern equivalent of tobacco industry executives who testify that smoking doesn't cause cancer. Both are an insult to common sense. If anything, Gates' claim is even less defensible. Ninety-five percent of today's PCs use Windows, certainly, 95% of smokers don't contract cancer. When you look at the increasingly vehement attacks on the tobacco industry, you see that much of the animosity stems from that initial big lie.

The parallels continue. Like Microsoft, Big Tobacco has made its share of specific concessions. Under pressure, Big Tobacco has restricted advertising and distribution and has placed strong warnings on its products. But despite those concessions, the tobacco industry remains a societal pariah because of the grotesque way it both denied and tried to hide the dangers of its products.

Once you get past the obvious differences between selling software and selling carcinogens, the parallels become clear. Under pressure, Microsoft also is making several specific concessions to limit product tie-ins, competitive restrictions and certain types of bundling. But no matter what it does or how much it spends, the company won't be deemed fully credible and trustworthy as long as it propagates its own big lie. More practically, as long as its very word is in doubt, Microsoft will never be safe from government and legal challenges.

Honesty would be a much more positive alternative. What if, in the 1960s, the tobacco industry had said, "Yes, the evidence does indicate that smoking often can cause cancer. On the other hand, many people know this and still choose to smoke. Let's work out a system that informs consumers, funds any social costs and limits our liability." Is there any doubt that such a deal would have been a bargain compared with what Big Tobacco will be forced to pay out in the near future?

Microsoft could sidestep future trouble by studying another industry's fatal mistake.

Similarly, what if Gates had stood before Congress and said, "Yes, we do have a virtual monopoly in PC operating systems, but we've won this business fair and square. More important, we've always sought to use our position for the benefit of our customers by providing critical interoperability, high levels of innovation and consistently low prices. Let's work out an understanding that recognizes our unique market position but doesn't destroy an environment that clearly benefits so many consumers."

Such a statement might well bring on more change, more rapidly, than the current tack of denial and delay. But once any initial wave of intervention subsided, Microsoft could get back on track toward being seen as a good corporate citizen.

Perhaps in a court of law, such perceptions are irrelevant. But in the court of public opinion, they matter a great deal.

Just ask Big Tobacco. □

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Overview by

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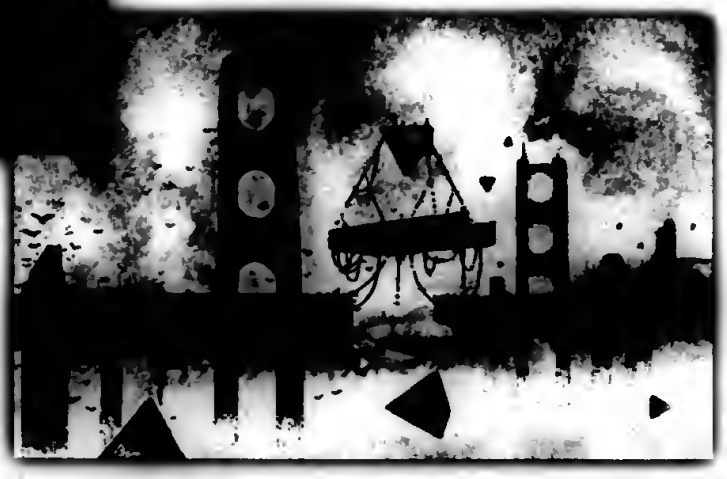
Special Advertising Supplement

Use of Object Databases Skyrocketing

Analyst, International Data Corp.

TODAY'S ENTERPRISES HAVE EMPLOYED SYSTEMS TO automate most of the obvious back-office and, more recently, front-office applications. Any competitive advantages derived from that automation activity is diminishing. To find other information technologies to leverage for competitive advantage, organizations are turning to the Internet/intranet and to a richer set of data types.

To keep pace with customer needs, companies are scrambling to extend the capabilities of their systems to support Internet-enabled applications and the multimedia data types typically found on the Web. The Web promises global access from a "universal client."



ILLUSTRATIONS BY CHRISTOPHER JUNG

The vast amount of information in today's enterprises is not the type of data traditionally stored in relational databases. These other types of information are instead kept in files, spreadsheets or, most likely, in non-digital form. The solution they are turning to is object technology.

But before they do so, IT organizations need to understand the differences between the approaches and solutions available in the marketplace. For example, understanding the difference between object database management systems (ODBMSs) and object-relational DBMSs (ORDBMSs) is crucial to the success of these endeavors.

Modern businesses need object databases. The march of technology has accelerated the pace of change. To respond to this force as well as events such as legislative changes, an enterprise must frequently modify its business processes.

In doing so, it may seek to achieve a combination of goals such as greater integration internally and with external stakeholders; greater mastery of the details of its business model; and increased business agility, so it can respond faster to a competitor's initiatives. And we are seeing this today.

In a poll of 15,400 sites last year, International Data Corp. found 23.1% of them involved with ODBMSs; 7.4% had approved their use for production applications and 15.7% had actually deployed such applications. These numbers indicate that the ODBMS market, currently a small fraction of the overall DBMS market, will continue to grow rapidly.

Since IT will continue to play a critical role in meeting business needs, the next generation of business applications must, of course, be standards-based, distributed and secure, and inherently scalable. They must also:

- Be rapidly adaptable.
- Be able to model the business accurately.
- Offer high availability and reliability.
- Offer information (as well as data), including information from external sources.
- Offer richer types of data.

These requirements can be applied to DBMSs as well. The DBMSs that complement the next generation of business applications must support:

- Complex data, extended data types, user-defined types and abstract data types.
- Object-oriented and component-based application models.
- Complex data relationships.
- Rapid application development.
- Rapid accommodation of change.
- High availability/reliability.
- Interoperability in secure, distributed, heterogeneous systems and networks.
- Inherent scalability.
- Easy-to-use access/analysis.

Of the database technologies available today, ODBMSs best offer the support for the requirements listed above.

DATABASE CHOICES

Users can now choose from three categories of DBMSs: relational (RDBMS), object-relational (ORDBMS) and object (ODBMS).

For applications involving high volume, routine transactions on simple data types and simple data relationships (e.g., master-detail), RDBMSs may be the best choice. They have been finely tuned to perform this kind of processing.

Most RDBMSs also have the ability to store images as large binary objects (BLOBs), but cannot do any processing based on the content of the BLOB. In RDBMSs, navigating complex relationships requires time-consuming multiple joins of the relevant tables.

RDBMS vendors have gone beyond BLOBs by extending their database engines to support the indexing and retrieval of additional data types, such as images, based on content. Underneath their ORDBMSs are still server-centric RDBMSs, but in adding this extended data type support, they compromise the perfor-

Continued on back page

ABOUT THE AUTHOR

Steve McClure is the primary researcher, writer and consultant for IDC's Object Tools market planning service. This service focuses on all aspects of object technology, including object-oriented analysis and design, object-oriented programming and object database management systems.

COMPANIES ARE TURNING TO OBJECT DATABASES TO STORE INCREASINGLY COMPLEX AND EVER-EXPANDING VOLUMES OF DATA.

ODBMSs: The Time Has Come

Today's toys are colorful amalgams of moving parts, sophisticated electronics and eye-popping special effects. But most toy makers can only depict them in static photos in paper catalogs that do not do them justice.

Linea GIG S.P.A., a toy maker as well as Italy's largest toy distributor, sought a more dynamic approach to display its wares. It wanted a sleek electronic catalog in which it could promote its full line of toys with images, sound and video. Dott. Giorgio Pezzin, managing director of GIG, wanted the multimedia catalog to "capture that same sense of wonder and delight" that children have when playing with their favorite toys.

To build and maintain such a catalog, the company chose Jasmine™, the object-oriented DBMS from Computer Associates International, Inc. CA's new information management offering not only enabled Pezzin to achieve his goal, but allowed him to do so in under three months. That's because Jasmine combines a pure object-oriented database with an integrated development tool, built-in multimedia support, a robust multi-platform deployment facility, and the openness to integrate with existing applications and data.

"By storing information as objects, we can compose next-generation applications very quickly, maximizing object application code reuse," says Pezzin. Jasmine's object database manages multimedia information and complex relationships among business objects "much better than a relational or hybrid database can," he adds.

Today's electronic catalogs must be exciting, easy to use and a fun experience for the shopper.

Object DBMSs (ODBMSs) have been around for years. Yet, only recently have growing numbers of organizations turned to such products to store increasingly complex and ever-expanding volumes of data from a myriad of media. One reason for this

rising interest is that object databases represent "the way users access data today," says Marc Sokol, senior vice president of advanced technology for CA.

That is why Jasmine has impressed corporate and third-party software developers. "Jasmine's pure object-oriented database solution [provides users with] a more natural and intuitive environment to manipulate complex information," says Ray Wilkes, vice president of sales for AltaVista Internet software at Digital Equipment Corporation. Jasmine's flexibility is also a big plus. Corporate users who need to link up to legacy RDBMSs can connect natively to OpenIngres®, Oracle, Informix, Sybase, SQL Server, CA-IDMS®, CA-Datacom®, DB2, VSAM and others. Meanwhile, OLE DB support provides report writers and decision-support tools with access to Jasmine.

▲ Traditional approaches that must map consumers to information sources lack flexibility, create redundancy, and are difficult to manage.

Object technology also allows companies to cut application development time dramatically and significantly reduce support and maintenance costs. This is because Jasmine's pure object-oriented database enables developers to create objects once and reuse them many times quickly and inexpensively. Developers can "build high-performance, scalable, content-rich, Web and client/server applications in a fraction of the time" it would take to use standard RDBMS technology, says Wilkes.

Incredible Card Corp., an application developer in Hicksville, N.Y., can attest to that. Jasmine helped cut application development time in half for the firm, which makes smart cards that provide doctors and emergency service technicians with instant access to a child's medical profile. According to Charles Fishman, chief technical officer, development projects used to take a minimum of 30 days; now they take less than two weeks. "Instead of trying to fit complex data into the mold of a relational database, we work purely with objects as objects," says Fishman. At Incredible Card, a child is essentially an object that has parents, fingerprints, pharmacist and doctor information. "If I need to develop another instance of a child, it's all replicated down to the fingerprint level," he adds.

Third-party developers who are extending their technology through Jasmine integration appreciate CA's open-systems model. They can create applications by using the drag-and-drop GUI of Jasmine's integrated development tool, called Jasmine Studio. But they can also choose a development language or tool they are more familiar with, such as Java, Visual Basic, native HTML, C, C++, or any ActiveX tool, to deploy applications in any environment—ranging from private networks to the Internet and corporate intranets/extranets. According to Fishman, "There are other pure object databases, but Jasmine is open and more robust."

LONG-AWAITED PROMISE

ODBMS products are not exactly new on the scene. However, the reason they have not taken off is because they didn't offer the minimum feature set required to support

businesses. Companies that have marketed ODBMS products for nearly a decade sold them mainly into specialty scientific niches. Acceptance by the general business community was lacking.

In 1997, mainstream database vendors like Oracle and Informix Software began adding object support to their RDBMSs. But these hybrid products (Oracle8, Informix Universal Server), with their limited object-relational capabilities, have fallen short of corporate users' requirements. Market research firms expect pure object databases to do better. Christopher P. Selland, research director with The Yankee Group in Boston, called Jasmine "a revolutionary product, which we believe may be able to achieve the long-awaited promise of object databases."

Why do experts expect Jasmine to have such a profound impact? Built from the ground up as a pure object database based on proven technology from Fujitsu Ltd., Jasmine is an unadulterated object-oriented database engine that can incorporate data such as graphics, video, sound and spatial coordinates that do not fit easily into relational database rows and columns. Previously, a company could capture at best 15% of all the data it manipulated. Jasmine, notes CA, can manage *all* of an organization's information—including audio, video, animation and financial instruments—over multiple platforms, including the Internet.

Investment institutions, for example, value Jasmine's support for objects that deal with time series analysis (which helps them understand stock market trends and fluctuations) and other non-traditional data. Jasmine allows these firms to access such complex information via Web browsers, says Richard Newman, executive vice president of Innovative Systems Techniques Inc. (Insyte), a software developer in Newton, Mass. Insyte's clients, which include T. Rowe Price and Putnam Investments, must evaluate analysts' ratings of companies, stock prices and financial analyses over a period of time. Insyte uses Jasmine to construct for clients complex databases that can allow them to view and hear analysts discussing specific stocks.

The rows and columns of relational databases don't accommodate the intricacy of corporate information, much of which is neither text nor numeric. Because object databases are better at managing complicated interrelationships between entities like inventory levels and customer order records, they are far better suited for complex data types than traditional relational databases.

Another factor propelling the need for object databases is the wide-

The pure object architecture of Jasmine supports the dynamic nature of today's business environments by providing all consumers with access to all information sources. ▼

spread use of the Internet and corporate intranets and extranets. With Web technology pushing multimedia applications to vast numbers of users worldwide, organizations require corporate databases to do more than store and retrieve simple information-like words and integers. Enterprise databases must possess the capability to manage and deliver complex data quickly to large numbers of users, over multiple platforms. They must also be able to maintain and update the data quickly and easily.

For instance, Jasmine will allow Toyota of Australia to move its multimedia-rich interactive accessories catalog to the Web, says Kevin Smith, national parts and accessories systems manager. Planned for installation in the 500 Toyota dealerships throughout Australia, the easy-to-use Jasmine-based point-of-sale application combines graphics, audio and sound, making it fun for customers to browse accessories and "build the car of their dreams," says Smith. "If they want to see the car equipped with a rear spoiler, or all dressed up with the sports package, a mere click of the mouse changes the image accordingly."

Toyota built the application to expand sales of its own accessories to car buyers at the time of initial purchase instead of losing their add-on business to auto supply stores. But to beat off-brand competitors to market, Toyota had to build it quickly. The huge amount of rapidly changing information required a robust and flexible database, which Jasmine supplies. "There is no other way to efficiently store the kind of elaborate multimedia we intended to use," says Smith. "And we didn't have the time to fiddle around with difficult programming languages. We needed an intuitive, visual development environment that was seamlessly integrated with the database to meet our prototype development schedule."

Jasmine will enable Smith's team to deploy the Windows NT-based system on the Web to provide access to customers in the Middle East, Southeast Asia, and the Pacific. "That's another one of Jasmine's strengths," says Smith. "The same version of an application can be deployed wherever we choose—in a standalone (kiosk) setting, on client/server systems and on the Web. This is accomplished without recoding or recompiling."

Jasmine-based application lets Toyota customers build the car of their dreams.

CONCLUSION

Object databases are finally coming into their own. As users discover how much more efficient it is to store objects in an object database, and how their newly created applications better mirror their business, ODBMSs will grow in popularity. "Jasmine's top-to-bottom object-oriented architecture is very appealing to us," says Michel Barry, technical director of cosmetics maker L'Oreal. "The database stores video as video, audio as audio, and images as images. Jasmine provides the optimum solution for centralizing and managing complex information."

Furthermore, the Internet and E-Commerce will only give object databases added impetus. "The rapid growth of the Internet is driving a new breed of applications that incorporate complex data, like video, animation and sound," says Alexis dePlanque, senior research analyst with Meta Group, a research firm in Stamford, Conn. "Products like Jasmine will fall into the sweet spot of IT development as companies focus on robust, complex Web implementations."

Emily Kay writes about technology as a principal with Choice Communications, an editorial consulting firm in Chelmsford, Mass.

mance advantage of RDBMs, because indexing schemes that had been highly tuned for six data types must now be generalized.

As a rule, ORDBMSs do not support navigational processing through complex data relationships very well. Grafting object support onto RDBMSs is not good engineering. Putting object extensions on RDBMSs is tantamount to adding stereo radios and global navigation systems to horse-drawn carriages. You'll have interesting enhancements, but the wrong base vehicle. In the end, it won't be the appropriate vehicle for the information superhighway.

A pure object DBMS can do more and can be used in a wider variety of situations than its relational or object-relational counterparts. This is because ODBMSs are designed to incorporate the latest innovations in database technology. They provide direct, efficient one-to-one support for applications written in object-oriented languages, e.g., Java. They also allow both the application and the database to naturally represent the application domain model of business. And they inherently provide both the broadest support for new data types and superior performance for applications with complex data relationships.

Since ODBMSs best support the needs of modern businesses, IDC predicts that the level of ODBMS adoption will continue to increase rapidly for the foreseeable future.

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Corporate Strategies

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Briefs

TOP THREATS

Types of attack detected in the past 12 months

Virus	83%
Insider abuse of Internet access	69%
Laptop theft	58%
Unauthorized access by insiders	40%
Telecommunications fraud	27%
Theft of proprietary information	21%
System penetration	20%

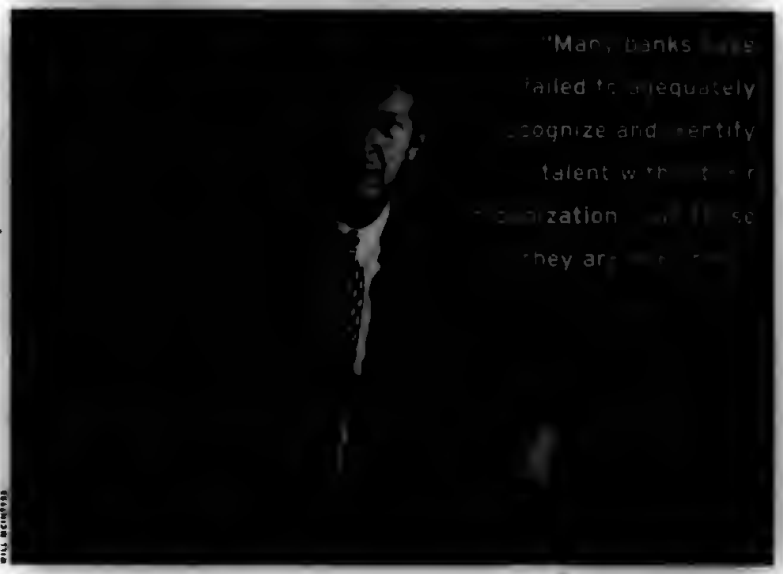
Base: 492 computer security officials; multiple responses allowed

Source: Computer Security Institute, San Francisco

How to handle a bank merger

The merger frenzy that's been driving big banks into each other's arms is familiar territory for First Union Corp.'s Austin Adams.

Adams, 55, is executive vice president of the automation group at the Charlotte, N.C.-based bank. He has shepherded more than 70 bank acquisitions over the past 13 years, including the recent $16.3 billion purchase of Philadelphia-based CoreStates Financial Corp. Computerworld senior editor Thomas Hoffman talked to Adams about the latest wave of mergers.



CW: What are the main lessons you've learned from the acquisitions you've been involved with?

ADAMS: The two most important things to focus on are the people in the merged institution. Second is the structure, the process and the crispness of the decision-making process.

Many banks have failed to adequately recognize and identify the technology talent within their organizations and those they're acquiring.

Ten days after the acquisition is announced, we take our senior technology people to meet senior technology staff of the acquired [bank]. We always listen to them first instead of walking through the door saying how good we are. We want them to perceive they are of value, even though their systems might be going away.

The second suggestion is to go through the hiring and systems selection as quickly as possible. People would rather hear bad news than no news.

CW: How have you applied that theory during the CoreStates acquisition?

ADAMS: [There were] 195 developers from CoreStates [out-

Bank merger, page 44

Ergonomics helps the bottom line

By Julia King

MENTION ERGONOMICS and what comes to mind at many companies is a funny-looking keyboard designed to minimize wrist pain for the most intensive computer users.

But not at the U.S. Automobile Association (USAA), the country's fifth-largest auto insurer. Later this week at the Managing Ergonomics Conference in Las Vegas, USAA will collect the Center for Office Technology's first award for outstanding office ergonomics.

At USAA in San Antonio, the emphasis is on preventing computer-related injuries. The payoffs go well beyond user comfort. Improved productivity, reduced training costs and significant reductions in disability and workers' compensation claims also are high on the list of quantifiable benefits of a proactive ergonomics program.

The IS team at the USAA once saved the company $1 million by prototyping an application first. A new hot-key sequence reduced wrist pain

A cornerstone of USAA's 9-year-old program is usability testing of every software application developed or purchased for use by workers in the com-

Ergonomics, page 44

DISASTER RECOVERY

Vaulting keeps money in the bank for NYCE

By Thomas Hoffman

THE NYCE CORP. has begun mirroring its transaction data under a project that could minimize the financial impact of an outage on its 1,300 member banks by more than $100 million.

NYCE's so-called real-time vaulting service was designed to replicate every one of the 100,000 transactions its automated teller machine (ATM) and point-of-sale (POS) systems generate hourly. It copies the transactions from its Secaucus, N.J., data center to a six-processor Tandem Computer Corp. Himalaya server at Sungard Recovery Services, Inc.'s Philadelphia hot site facility over T1 connections.

By replicating data continuously on a mirrored system, NYCE executives expect to be able to restore the network within two hours of a disaster. Using tapes stored off-site,

NYCE vaults, page 44

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Telecom projections

Global spending on computing systems designed to support new telecommunications services will exceed the revenue growth expected from the new services by 13%, according to a report from Insight Research Corp. in Parsippany, N.J.

Global spending on hardware, software and services for supporting telecom services for customer service and other areas will grow from $25 billion this year to $38 billion in 2002, Insight said. Revenue for telecom providers is expected to jump from $729 billion to $1.1 trillion during the same period.

Hacker protection

The International Computer Security Association, Inc., based in Carlisle, Pa., recently launched a service to protect networks from attacks that are launched via the Internet.

The TrueSecure TCP/IP-based service defends the network perimeter against bad passwords, undocumented dial-up modem lines, insecure World Wide Web servers and unsecured NetBIOS problems not covered by network firewalls. Pricing for TrueSecure begins at $39,900 per year.

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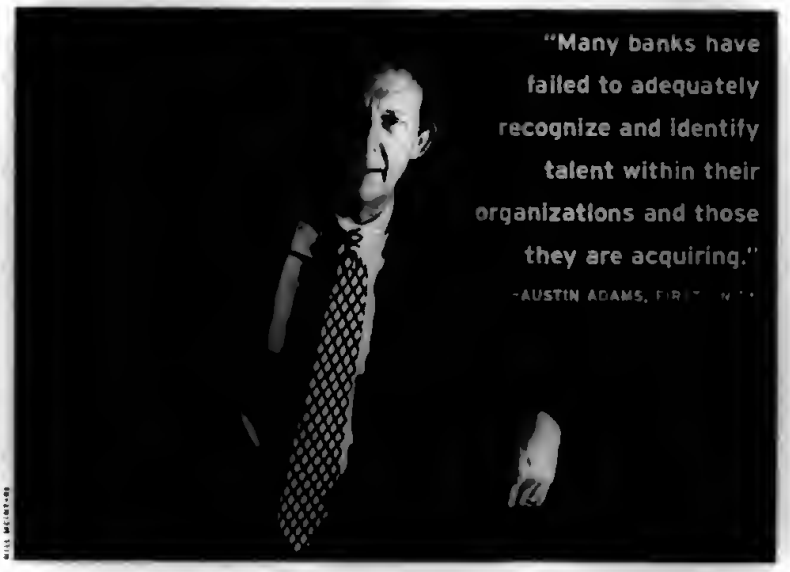
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-AUSTIN ADAMS, FIRST

Bill Bridges

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How to handle a bank merger

CONTINUED FROM PAGE 41

sourced to] Andersen [Consulting] in November. We have negotiated a termination of that contract with Andersen and have offered those employees positions with First Union. Eighty percent have expressed interest in joining First Union.

On the infrastructure side, a decision was made by CoreStates last year to outsource that group to GE Capital [Corp.], but the contract was never executed. We will maintain one of two [CoreStates] data centers in Reading, Pa., and close the Philadelphia data center. However, there are a number of openings in our Charlotte data center.

CW: How can NationsBank and BankAmerica Corp. achieve their systems consolidation cost savings targets and complete their year 2000 projects on time with existing resources?

ADAMS: The financials of the [NationsBank/BankAmerica merger] aren't as [closely] tied to expense reductions as they were in the NationsBank/Barnett Bank deal, where they had to reduce expenses by 50%. But I would think there would be very little systems integration done between these banks before the second quarter of 2000. I frankly don't think there's much time for them to do any [systems integration].

CW: Given the year 2000 and systems integration constraints financial institutions face, will banks have to postpone mergers by late 1998 or early 1999?

ADAMS: A few organizations like First Union can announce transactions in late '98, early '99 and convert in time and be operationally sound. A more likely scenario is that banks will go on the market in late '98, early '99, too late to consolidate and thereby significantly delay the cost savings.

What you're going to have is, in logic, the price of the acquired institution is going to be less because it's going to take much longer to get the efficiencies.

Plus, the acquiring institution might have to hire more contract resources, expensive resources, to get the acquired systems converted for year 2000 [compliance]. It's a sunk cost.

CW: What tips would you offer your peers at merging banks about dealing with systems integration issues and year 2000 issues?

ADAMS: You need to define roles and responsibilities as quickly as possible in mergers of equals. It's the crispness of decision-making and the finality of it that separates successful mergers from those that aren't.

Then, two weeks after [the merger is] announced, decide who the decision-makers are. It's the uncertainty and the delays that kill you. □

NYCE vaults data

CONTINUED FROM PAGE 41

restoration takes up to 18 hours.

That could lessen a disaster's financial impact by $128 million because NYCE processes an average of $8 million in ATM and POS transactions per hour, said Steven A. Rathgaber, executive vice president and chief operating officer for the Woodcliff Lake, N.J.-based electronic funds transfer network.

When customers' ice cream is melting in their shopping cart at a supermarket checkout because the POS system isn't working, "it's not just NYCE that gets a black eye, it's [the member banks] who suffer," Rathgaber said.

NYCE's Steven A. Rathgaber says a vaulting service with Sungard should minimize the potential financial impact of a disaster

KEEPING THE FAITH

Not to mention future business that member banks such as The Chase Manhattan Bank Corp. in New York and retailers such as Fairfax, Va.-based Mobil Corp. could lose if customers' faith in the funds transfer network is shaken. "Next time, a customer might not use their NYCE card," added Rod Reef, president of Citishare Corp., a Long Island City, N.Y.-based electronic funds transfer service for New York-based Citicorp, and a NYCE board member.

Actually, it was Reef and other NYCE board members who recommended the $2 million project, which was completed in February. NYCE hasn't experienced a significant outage to its electronic funds transfer network since it launched the network in 1985. But if one were to occur, "there's no way of putting up a sign that says, 'NYCE is down. Please come back in 15 minutes,' " Reef said.

Reef said NYCE's $2 million investment in the service, which includes a one-time $1 million investment for equipment, "is not outrageous."

Rathgaber said it would have cost NYCE $1 million more per year had it tried to set up its own vaulting service and off-site facility.

The use of vaulting services, particularly among financial services organizations, "is becoming more and more prevalent as recovery-time objectives shorten," said Jack Sotallaro, president of JS & A Consulting, a Cooway, Ark.-based disaster-recovery planner.

A VAULTED CONCEPT

Vaulting has been available for years to companies that use channel extensions on mainframes, Sotallaro said. The problem, he said, was the high cost and spotty reliability of those systems.

With today's servers, "you're talking a smaller footprint, so the hot site charges you less to store it there," Sotallaro said. □

Ergonomics pays off

CONTINUED FROM PAGE 41

pany's Property & Casualty Division. Users work with information systems staffers from the start of new development projects to lay out data flows and screen designs. Much of the earliest work is done on paper.

In one recent case involving a new needs-based sales and services application, developers cut training time by 60%.

"That way, we can rapidly prototype something before code is put behind it," explained Cindy Colunga, the IS staffer who manages the company's cross-functional performance-centered design team. The team comprises representatives from IS, safety and environmental affairs, risk management and facilities and support.

"By involving users up-front, we work most of the kinks out, which reduces the amount of training needed later," Colunga said. In one recent case involving a new needs-based sales and services application, developers cut training time by 60% by following users' directions for making the software easier to navigate, she said.

In another instance, USAA saved at least $1 million by having users test a graphical user interface — to be used by 4,000 people — to its mainframe systems while the software was under development.

"In test mode, nine out of 13 employees were complaining of wrist pain due to a keying combination that put the wrist in awkward positions," said Hank Austin, manager of safety and environmental affairs. So the software developers came up with a hot-key sequence that minimized the number of key strokes.

Preventing injuries is also the idea behind USAA's one-on-one ergonomics consultations and worker training. Since 1992, more than 20,000 workers have received ergonomics training and more than 7,200 workers have received individual ergonomics counseling.

In the same time period, payments of claims for musculoskeletal disorders have shrunk from 66% to 48% of all workers' compensation payments at USAA.

Austin, for one, believes there's a major business lesson in such numbers.

"The impact new software and technologies has on employees is rapidly becoming a competitiveness issue to companies," he said.

"There's a lot of traps if we're not careful as we deploy new technologies. We could field a product that ends up injuring people. That's why ergonomics has got to become part of a company's corporate culture," Austin said.

"Those companies that don't start doing it will find themselves in a world of hurt not too far down the road," he said. □

Schwab wins one, loses one to the Web

By Stewart Deck

LAST WEEK, AS Charles Schwab & Co. was honored for its World Wide Web site, that same site and the stock trader's telephone service crashed for two hours, leaving traders able to make stock deals only the old-fashioned way.

Schwab was presented with a Global Infrastructure Commerce Award at the Comdex/Spring '98 computer trade show in Chicago for helping make online stock trading inexpensive and easy.

Other honorees included innovation award-winner Yahoo, Inc., government site-winner Indianapolis' IndyGov site and community award-winner The Body, an AIDS and HIV resource site.

OUT OF THE LOOP

But on the same day that Schwab was accepting the praise, its customers were left unconnected from 9:45 to 11:45 a.m. EDT, unable to make stock trades via the company's Web site or through Schwab's automated Touch-Tone telephone service.

Schwab employees also were unable to look up user accounts or gather stock information from the firm's network. Customers were able to conduct trading chores in person in Schwab offices or by telephone with live operators.

Tom Taggart, a Schwab spokesman, said the network trouble was caused by a central hub crash, but he had no further details. □

The 1998 World Cup Soccer Tournament is one of the largest media events of all time, with a cumulative television audience of billions. Not to mention 2.5 million spectators, 12,000 volunteers and 12,000 media representatives. They'll all need up-to-the minute information about everything from results to schedules to tickets. Like any business, the World Cup also has accounting, human resources, security and e-commerce needs. And Sybase software is behind it all.

With a Web site (www.france98.com) that may be the most visited in history, capable of handling more than 100 million hits a day, and providing everything from statistics to souvenir sales. So if we can do all that, surely we can keep your company's information systems in top shape.

To learn more about the technology used to make the World Cup a success, and to find out about our World Cup Information Anywhere Enterprise Solutions tour, visit www.sybase.com/events or call 1-800-8-SYBASE (Ref. CPCW).

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WANG

The Internet

Electronic Commerce • The World Wide Web • Intranets

Briefs

SAVING UP

Percentage of Internet domain names registered but not in use

.com	42%
.net	50%

Base: Survey of 1.9 million registered domain names

Source: Addy & Associates, Inc., Callahan, Fla.

E-commerce heating

Two major players in the digital certificate and electronic payment arenas have joined forces to create a single package that combines their products. VeriSign, Inc.'s Secure Electronic Transaction digital certificate offerings will be bundled with VeriFone, Inc.'s Internet payment products. No pricing information was available.

Home banking rules

Backers of two competing home-banking standards, the Open Financial Exchange (OFX) and Gold, have agreed to create a next-generation technical specification with cross-compatibility. OFX is supported by Microsoft Corp. and Intuit, Inc. Gold was developed by the Integrion Financial Network consortium, which includes IBM. "Having two specs to glue . . . will quickly broaden products and services and will allow greater economies of scale in development," said Scott Smith, an analyst at Current Analysis, Inc. in Sterling, Va.

Outsourcing E-mail

InfiNet, Inc. in Denver has formed a division to handle outsourced E-mail. InfiNet Express will customize and deliver messages for companies whose customers request communication such as daily news bulletins, new-product updates or local movie listings.

InfiNet currently delivers about 3 million messages daily to subscribers and has worked as a service bureau for companies such as American Express Co. and Time Warner Media Ventures.

Separating webmasters from the chaff

▸ *Certification program would define skills*

By Tim Ouellette

A NEW INTESNET certification effort could help companies weed out "webmaster wannabes" from the thousands of independent contractors who can really do the job.

The Certified Web Technician program will be the first in a line of World Wide Web certifications that outline a clear set of vendor-independent skills needed when designing, building and maintaining corporate Web sites (see chart at right).

The reason: A boom in Internet electronic-commerce projects combined with a shortage of skilled professionals in that area has left many businesses to use hired guns who may talk the talk but can't deliver the goods, observers said.

For example, Black Diamond Consulting, Inc., an Internet consulting firm in Portsmouth, N.H., had to change contractors for its Web site project in midstream and start over from scratch because its site design and code were in shambles, company officials said.

The site had just gone up and was such a mess that Black Dia-

Certification, page 48

BE ON THE LOOKOUT

Before you hire that fast-talking, looks-the-part Web worker, make sure he knows how to:

ROBERT NEUBECKER

- Connect a LAN to the Internet
- Troubleshoot client HTML pages
- Analyze network traffic
- Maintain security of content transfers
- Perform disaster recovery
- Set up and maintain server hardware, software and extensions

Source: Association of Web Professionals, Mississauga, Ontario

LONNIE DILLON

CNN Interactive's Mark Bernstein, Paul Holbrook and Dave Rickett (from left)

CNN: Not everyone wants customization

By Sharon Machlis

NOT EVERYONE wants their news personalized.

CNN executives, who run one of the most popular customizable news sites on the World Wide Web, said tailor-made news has become an important complement to their main news site, not a substitute.

Instead of tailoring news for each individual, Cable News Network tailored its site to offer custom news for those who want it and general news for the rest.

DÉJÀ VU

WHATEVER HAPPENED TO:

CNN Custom News

"There was a time that everyone thought . . . we will all take our information personalized," said Mark Bernstein, vice president and general manager of CNN Interactive. "But people like to browse. They like interactivity."

Less than a year after the site's launch

Site personalization, page 48

CYBERCRIME

Special FBI unit targets online fraud, gambling

By Laura DiDio

THANKS TO A special FBI unit that focuses on electronic crime, 78 people who used the Internet to run a child pornography ring went to jail in 1996.

In the six years since its inception in 1992, the FBI's National Computer Crime Squad (NCCS), which is run by the bureau's National Infrastructure Protection Agency, also has broken up securities and investment fraud schemes and online gambling.

It also investigates violations of the Federal Computer Fraud and Abuse Act of 1996 and probes electronic crimes that cross international borders. Those include intrusions into financial, medical and government computers and networks.

In the past year, the FBI has investigated about 2,300 white-collar crimes, said Mark Pollitt, a Washington-based special agent whose specialty is forensic evidence. Computer crime and computer-related fraud accounted for about 5%, or about 115 cases. "That's not a reflection on the total number of computer crime and fraud cases. That's just how many we

FBI, page 48

Publisher to target ads based on preferences

▸ *Web tool zeroes in on customers' interests*

By Carol Sliwa

ONE-TO-ONE marketing may not be the rage just yet, but one publishing company already is envisioning the possibilities. Officials are anticipating an enhanced Internet-commerce application from Netscape Communications Corp.

The Medical Economics Co. in Montvale, N.J., wants to target content to its customers and give its advertisers, which include pharmaceutical companies, the chance to send drug and educational information to subscribers who show an interest in a particular disease or illness, said Suzanne BeDell, vice president of new media.

To that end, Medical Economics this summer plans to use PublishingXpert from Netscape in Mountain View, Calif.

Released two weeks ago, PublishingXpert 2.2 features a high-end advertising server that lets companies control and manage the targeting of ads and content based on user preferences and viewing habits.

The product also can help manage subscriptions.

Web tool, page 48

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A NEW INTERNET certification effort could help companies weed out "webmaster wannabes" from the thousands of independent contractors who can really do the job.

The Certified Web Technician program will be the first in a line of World Wide Web certifications that outline a clear set of vendor-independent skills needed when designing, building and maintaining corporate Web sites (see chart at right).

The reason: A boom in Internet electronic-commerce projects combined with a shortage of skilled professionals in that area has left many businesses to use hired guns who may talk the talk but can't deliver the goods, observers said.

For example, Black Diamond Consulting Inc., an Internet consulting firm in Portsmouth, N.H., had to change contractors for its Web site project in midstream and start over from scratch because its site design and code were in shambles, company officials said.

The site had just gone up and was such a mess that Black Dia-

Certification, page 48

BE ON THE LOOKOUT

Before you hire that fast-talking, looks-the-part Web worker, make sure he knows how to:

- Connect a LAN to the Internet
- Troubleshoot client HTML pages
- Analyze network traffic
- Maintain security of content transfers
- Perform disaster recovery
- Set up and maintain server hardware, software and extensions

Source: Association of Web Professionals, Mississauga, Ontario

CNN Interactive's Mark Bernstein, Paul Holbrook and Dava Rickett (from left)

CNN: Not everyone wants customization

By Sharon Machlis

NOT EVERYONE wants their news personalized.

CNN executives, who run one of the most popular customizable news sites on the World Wide Web, said tailor-made news has become an important complement to their main news site, not a substitute.

Instead of tailoring news for each individual, Cable News Network tailored its site to offer custom news for those who want it and general news for the rest.

DÉJÀ VU

WHATEVER HAPPENED TO:

CNN Custom News

"There was a time that everyone thought . . . we will all take our information personalized," said Mark Bernstein, vice president and general manager of CNN Interactive. "But people like to browse. They like interactivity."

Less than a year after the site's launch

Site personalization, page 48

CYBERCRIME

Special FBI unit targets online fraud, gambling

By Laura DiDio

THANKS TO A special FBI unit that focuses on electronic crime, 78 people who used the Internet to run a child pornography ring went to jail in 1996.

In the six years since its inception in 1992, the FBI's National Computer Crime Squad (NCCS), which is run by the bureau's National Infrastructure Protection Agency, also has broken up securities and investment fraud schemes and online gambling.

It also investigates violations of the Federal Computer Fraud and Abuse Act of 1996 and probes electronic crimes that cross international borders. Those include intrusions into financial, medical and government computers and networks.

In the past year, the FBI has investigated about 2,300 white-collar crimes, said Mark Pollitt, a Washington-based special agent whose specialty is forensic evidence. Computer crime and computer-related fraud accounted for about 5%, or about 115 cases. "That's not a reflection on the total number of computer crime and fraud cases. That's just how many we

FBI, page 48

Publisher to target ads based on preferences

▸ *Web tool zeroes in on customers' interests*

By Carol Sliwa

ONE-TO-ONE marketing may not be the rage just yet, but one publishing company already is envisioning the possibilities. Officials are anticipating an enhanced Internet-commerce application from Netscape Communications Corp.

The Medical Economics Co. in Montvale, N.J., wants to target content to its customers and give its advertisers, which include pharmaceutical companies, the chance to send drug and educational information to subscribers who show an interest in a particular disease or illness, said Suzanne BeDell, vice president of new media.

To that end, Medical Economics this summer plans to use PublishingXpert from Netscape in Mountain View, Calif.

Released two weeks ago, PublishingXpert 2.2 features a high-end advertising server that lets companies control and manage the targeting of ads and content based on user preferences and viewing habits.

The product also can help manage subscriptions.

Web tool, page 48

Site personalization

CONTINUED FROM PAGE 47

[@CW, June 4, 1997, see *www.computerworld.com/cnn*]. CNN's Custom News has more than 300,000 registered subscribers and is on target with its business plan. Officials declined to discuss specific numbers but said that depending on how expenses are apportioned, Custom News is at or near break-even. The main CNN site, which doesn't require registration, has served more than 11 million unique users. Both sites are free to users.

CNN Custom News (*http://CNN.com/CustomNews*) lets people create their own CNN news page, incorporating subjects they have specified from among 1,500 options, such as national, local, world, business, sports, weather and entertainment news. There also is a clipping service that will search for any user-defined keywords.

HOT TOPIC

Personalization is becoming an increasingly hot topic on the Web. Microsoft Corp. recently announced plans to acquire profiling company Firefly Network, Inc., which has technology to track user interests. And several "portal" Web sites such as Excite and Lycos recently beefed up their custom home pages.

The CNN site delves much deeper into news categories than the portal sites. It offers nearly 200 different countries under world news, for example, and serves up stories from more than 100 different publications and wire services as well as CNN itself.

"It makes sense to personalize across categories," said Patrick Keane, an analyst at Jupiter Communications, Inc. in New York. "CNN offers more very specific news across many vertical [subject areas]."

The project is a joint venture with Oracle Corp. and uses that company's Web Application and Universal servers, as well as the ConText feature for the Universal server, which handles text analysis, retrieval and management. "It's the single biggest piece of infrastructure of any site we've got, except the main site," said Paul Holbrook, director of Internet technologies at CNN, which also hosts the CNN/SI sports and CNNfn financial sites. "Oracle came in with a very, very solid design of hardware and software. . . . It scaled quite well."

ON THE SERVER

The design is completely server-based, so users don't have to download any special software to use it. No complex site runs itself, so the Custom News site takes advantage of work done by editors at the main site who manually go through stories, said Dave Rickett, producer of CNN Custom News. It then "harvests" news from CNN.com and automatically loads it into the Custom News templates.

One of the things Custom News gives CNN is a better ability to respond to user feedback, he said. On the main site, for example, if someone wants more news about Chad, there isn't much the staff can do to accommodate that. But on the Custom site, CNN boosted the number of countries tracked, from roughly 90 initially to almost double that now. It also hiked the clipping service capabilities from three keywords to 10. The site also added more entertainment options.

"It's being able to listen to your users," Rickett said. "We are constantly upgrading. I have about four upgrades specced out." □

Web tool

CONTINUED FROM PAGE 47

"A lot of organizations are looking to the Web for competitive advantage, and one of the ways to achieve that is through personalization — offering customized, unique features for customers," said Heather Ashton, an analyst at Hurwitz Group, Inc. in Framingham, Mass.

"The need is there. But a lot of new technologies have just come to market, so the technology adoption curve isn't high at this point," Ashton said.

The MedEc Interactive World Wide Web site now is used primarily by doctors. But Medical Economics hopes to open the site to other health care professionals and consumers.

A consumer, for example, might type in a search for information about diabetes. But Medical Economics would like to deliver information without specific searches, for topics that users say they want to know about, similar to many Web custom news services. □

Tips from the FBI's National Computer Crime Squad:

- Implement a log-in banner to warn unauthorized users they may be monitored
- Turn on audit trails
- Request trap and trace ing from local telephone company
- Make backups of damaged or altered files
- Maintain old backups to compare to changes
- Designate one person to secure potential evidence; evidence can include tape backup and printouts
- Keep a record of resources to re-establish the system and locate the perpetrator

FBI hits cybercrime

CONTINUED FROM PAGE 47

investigated," Pollitt said.

What makes life difficult for the FBI and corporate victims alike is that there is more information than ever online, and that information is vulnerable to hacks, Pollitt said.

"Four years ago, the average computer had 500M bytes. Today, the average system hard drive is 2G bytes, and several terabytes of data for network servers and mainframes," he said.

GOOD TRACK RECORD

Though the FBI's NCCS is hard-pressed to keep pace with the sheer number of crimes, it has made some big collars, including the following:

- The arrest of infamous telecommunications hacker Kevin David Mitnick in 1995.
- The 1996 arrest of 88 people — 78 of whom were convicted — in the FBI's Operation "Innocent Images" bust for trading child pornography over the Internet.
- The 1997 "Cyber Strike" investigation run by the NCCS's San Francisco unit, which concentrated on criminals who improperly use copyrighted information and commercial software. The investigation also uncovered stolen credit-card and calling-card numbers and the theft of telephone services.

Traditional crimes such as investment fraud and gambling also are thriving on the Internet, according to Charles L. Owens, chief of the FBI's financial crimes section.

Last spring, Owens testified before the Senate Judiciary Committee's Subcommittee on Technology, Terrorism and Governmental Information about a case that the NCCS tracked in which investors were offered an annual return of 200% to 420% on "prime bank instruments," a nonexistent securities instrument. "Losses from that scheme are believed to have totaled $3.5 million," Owens said.

On the gambling front, the FBI's Northeast field office conducted raids on two suspected Internet gambling operations; the 1996 proceeds were estimated at $56 million.

The biggest problem, Pollitt said, is that although some businesses "nearly solve the case" for the FBI by providing it with prior backups and preserved evidence and identifying potential suspects, many more users are lax, making it difficult for the FBI to pursue the case. "If businesses can't police their own networks and give us information on tracking hackers, then law enforcement agencies like the FBI are limited as to what action they can take legally against network intruders," Pollitt said.

He outlined three basic tenets for securing data: finding it, saving it and preserving it. He said that a simple checklist will help companies determine if they have the resources in place to secure their corporate data.

"But the biggest single determinant of security is your people — end users, administrators and designers. Never give any single individual all the keys to the kingdom," Pollitt said. □

MORE ONLINE

@Computerworld research links on computer forensics with information on high-technology crime associations, guidelines, journals and papers can be found at www.computerworld.com/fbi, under "Cybercrimefighting: Computer Forensics."

Certification program would define Web skills

CONTINUED FROM PAGE 47

mond fired the contractor.

"Unfortunately, this is a pretty common story in Web development," said Evan Karatzas, co-founder of Active Media Technologies in Oxford, Mass., the firm that rebuilt Black Diamond's site.

Karatzas plans to use the certification in his own hiring process, to pinpoint quality candidates and eventually to get the whole company certified.

BENCHMARKS LACKING

Until now, the only barometer for choosing Web developers were vendor-specific certifications and the developer's portfolio of past projects. Also, some companies, such as GE Capital Corp. in Stamford, Conn., have begun to depend on Web-specific staffing firms to weed out questionable developers [CW, March 23]. But there still are no solid benchmarks when choosing those people.

That's why the 400-member Association of Web Professionals (AWP) in Mississauga, Ontario, with the support of industry heavyweights Microsoft Corp., IBM and Netscape Communications Corp., is developing the new vendor-neutral certification, said AWP Executive Director Dennis Kwasnicki.

Candidates will be tested on networking skills, Web security, site development and site maintenance, among other topics.

The vendor-neutral rating will give businesses more flexibility in choosing the Web technology they want to run and give them access to a wider pool of potential workers.

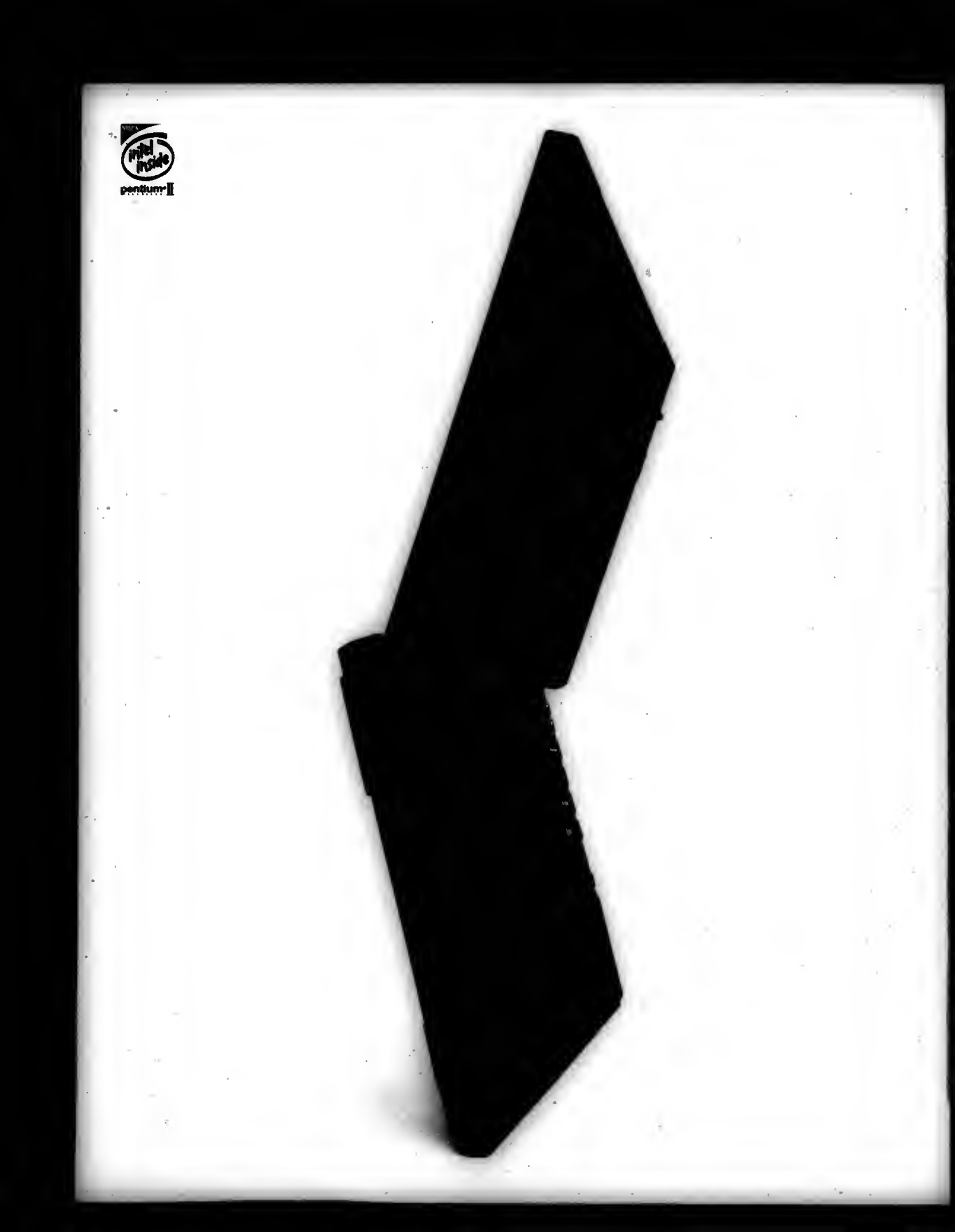
"I am interested in this," said John Jeblonski, an independent technical Web programmer in Boston. The certification could help support his portfolio of completed sites by giving potential clients more reassurance of his skills, he said.

In June, worldwide training firm Global Knowledge Network, Inc. will start providing training for the certification test at its sites around the world. AWP also will begin work on a certified Web site designer and certified site manager program this year, Kwasnicki said. □

THE WORK
MATTERS.

THE PEOPLE
MATTER.

THE TOOLS
MATTER.


intel inside
pentium II

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Premiering April 28 / Up to 266 MHz[a] Mobile Pentium® II processor / Up to 13.3-inch screen / About 5 lbs travel weight / 1.4 inches thin

e-business tools

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The power of e-business grows with every PC you add to the network. So does the need for manageability. This is the inspiration behind the new IBM PC 300PL. It's open. It's easy to set up. And every component is carefully located, so the most critical ones are easiest to get to. Our unique Alert on LAN feature notifies the IT manager of many issues *before* they become problems–even if the IBM PC 300PL is turned off. Recently, our desktop PC line was recognized by the Industrie Forum Design Hanover, the international industrial design society. They reward innovation and functionality. We believe innovation and functionality reward you.

e business tools

Up to 400 MHz Pentium II processor / 2D/3D AGP graphics capability / Integrated 10/100 Ethernet / From $1,449*

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Up to 2-way, 400 MHz Pentium II processor / Up to 1GB SDRAM ECC memory / 100 MHz front-side bus speed

ebusiness tools

The server is the engine that drives e-business. When it powers business-critical operations, it needs to be reliable. The bulletproof design of the new Netfinity® 5500 delivers on this. The 5500 is designed and tested to run important network operating systems, such as Windows NT,® for example. Its hot swap capabilities help you upgrade or modify it without shutting down. And our Update Connector software helps network managers get the latest system updates via the Web. Which means your system's performance isn't merely reliable–it's constantly fine-tuned. This is e-business in action. This is good.

IBM NETFINITY 5500 SERVER

IBM INTELLISTATION M PRO

Engineers, architects, designers and financiers need a killer workstation. You need everyone to be connected. The new IntelliStation™ M Pro answers both needs. It runs advanced Windows NT workstation applications as well as standard business software. It has a unique combination of smart manageability features. And IBM's unique Web-based software can help you fine-tune the performance of your applications and your system (e-business is also about how intelligently *machines* use the Web). Of course, there's an argument that technology is functional in direct proportion to its beauty. Amen.

e business tools

Up to two 400 MHz Pentium® II processors / Matrox Millennium II, PERMEDIA 2, Intergraph Intense 3D graphics accelerators / From $2,499*

*MONITOR SOLD SEPARATELY

14.1-inch viewable image size Flat Panel Monitor / Top Ten, iF Product Design Awards, 1998 / From $1,199*

e-business tools may simply be tools that help people work more effectively. That's why IBM offers hundreds of intelligent computer options. IBM Flat Panel Monitors, for instance, save valuable desktop space, with a footprint that's over 60% smaller than traditional monitors. They're also just flat-out inspiring, capable of crisp, flicker-free images in up to 16.7 million color combinations. The ScrollPoint™ Mouse, another option, lets you cruise in many directions through big spreadsheets and Web sites, without constant trips to the navigation bars. Options like these make work easier. Which, in turn, makes e-business happen.

OPTIONS BY IBM

e-business tools

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THAT MAKES SOMEONE FEEL DIFFERENTLY

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The beauty of e-business? Online, a small company can look big without having a big budget. That's the thinking behind the affordable new Netfinity 3000 Server, a sleek Windows NT server. With the Lotus® Domino Intranet Starter Pack,™ you can plug in the Netfinity 3000 in the morning and be an e-business by nightfall. And like other IBM products, the Netfinity 3000 benefits from extensive research and development. Plus, with IBM's SystemXtra™ you can lease IBM hardware, combining flexible financing, support services, software and training to fit your needs. Go. Start an empire.

IBM NETFINITY 3000 SERVER

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[1]May vary due to componentry and manufacturing variances. [2]5 pounds is traveling weight. With CD-ROM drive, battery and hard drive, weight is about 5.5 pounds. Actual weight may vary. [3]MHz denotes microprocessor internal clock speed only; other factors may also affect application performance. [4]Estimated reseller price to end users for model 6862180 (IBM PC 300PL), 6898100 (IntelliStation M Pro), 9514823 (14-inch Flat Panel Monitor), and 8476100 (Netfinity 3000 Server), certain features described above are available for an additional charge. Actual reseller prices may vary. All PCs referenced in this ad include an operating system. IBM product names are trademarks of International Business Machines Corporation. Microsoft, Windows and Windows NT are registered trademarks of Microsoft Corporation. Lotus, Domino and Domino Intranet Starter Pack are trademarks of Lotus Development Corporation. Intel Inside and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. ©1998 IBM Corp. All rights reserved.

The Enterprise Network

LANs • WANs • Network Management

Briefs

LAN O' PLENTY

Spending on LAN management products

1997	$4.3B
2000	$6.4B*

* Projected

Base: 100 network managers at U.S. companies that have 1,500 or more nodes

Source: Infonetics Research, Inc., San Jose, Calif.

By Patrick Dryden

NEWS ANALYSIS

WHEN IT COMES to network design, putting all your eggs in one basket just invites omelettes, IS managers warned.

AT&T Corp.'s frame-relay network collapse April 13 dramatically demonstrated that to some information systems groups [CW, April 20].

Failure is inevitable for any kind of network connection, so AT&T's crash and its surprising duration should remind customers that they must decide how much they are willing to pay for uninterrupted service, said Ed Koch, telecommunications vice president at First Data Resources, the IS arm of First Data Corp. in Hackensack, N.J.

"Now when we discuss network engineering with our clients, we have a fresh example to make the business case for reliable networks," Koch said. "Those who felt that frame relay is reliable learned it's as unsinkable as the *Titanic*."

As a postmortem, IS groups and their customers are re-evaluating the business importance of wide-area networks and of earlier decisions about what constitutes acceptable communication slowdown or interrup-

Networks, page 60

• Internet access

Users still go for cheaper, slower ISDN

By Matt Hamblen

WITH ALL THE news about people moving to cable modems and Digital Subscriber Line (DSL) for fast access to the Internet, it might seem like ISDN is headed the way of the dinosaur.

But analysts and local carriers see a lot more life in Integrated Services Digital Network (ISDN) technology, especially for users who don't need transmission speeds of more than 128K bit/sec. but do need to hold down costs.

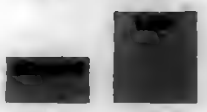
For example, Honor Technologies, Inc. in Maitland, Fla., actually wants ISDN because of its low cost and low bandwidth. The company operates 35,000 automated teller machines (ATM) nationally and recently set up an ISDN for 275 ATMs in the mid-Atlantic area, using services from Bell Atlantic Corp. in New York.

"Usually, ISDN is not used for the primary connection to the network," said Owen Kelley, vice president of operations. "But we were looking for an economical solution to give enough quality of service."

Kelley said he will try to add

Network outage, page 60

North American shipments of ISDN terminal adapters



* Projected

Source: Dataquest, San Jose, Calif.

MANAGEMENT TOOL

Spectrum 5.0 goes beyond the network

By Patrick Dryden

SPECTRUM NETWORK management software from Cabletron Systems, Inc. isn't just for networks anymore, according to some users.

Enhanced Spectrum 5.0, due next month and equipped with better reporting, automation and performance, will link to tools from Rochester, N.H.-based Cabletron and a handful of partners — some well-known, some unknown.

The goal is to provide a tool kit that can help users manage

Spectrum, page 60

CC:Mail users ponder: Notes or Exchange?

▸ *Vendors vie for customers of discontinued E-mail*

By Barb Cole-Gomolski

IN RECENT WEEKS, Lotus Development Corp. and Microsoft Corp. have announced deals ranging from software discounts to new migration tools for World Wide Web sites that are looking to dump Lotus' CC:Mail.

Lotus is ending CC:Mail development and urging users to switch to Notes.

But what about those users who are happy with the wildly popular package that was originally designed for workgroups and became a corporate standard at many Web sites?

"Notes is more than just a mail client, and Lotus really hasn't educated us about why we need it," said Paul Badowski, a senior networking specialist at Belcan Engineering Group, Inc., a CC:Mail site in Cincinnati. Badowski and other users questioned Lotus' decision to push CC:Mail users to Notes instead of continuing to develop both products. "Companies like General Motors [Corp.] sell products that compete with each other," he said.

CC:Mail, page 60

WHAT'S YOUR PREFERENCE?

Options for migrating to a new E-mail system:

Strategy	What it involves	Pros	Cons
Global switch-over	Switch users en masse	No need to integrate old and new systems	Not practical for large organizations
Gradual move/ no gateways	Move users in groups, provide no links to old system	Keeps integration costs down	Some users can't communicate at some points during move
Integration with migration	Provide gateways between new and old systems	Users can communicate with anyone	Requires gateways, which are hard to manage

Source: Creative Networks, Inc., Palo Alto, Calif.

The Enterprise Network

LANs • WANs • Network Management

Briefs

Token Ring switch

Token Ring power Madge Networks, based in Wexham Spring, England, recently announced Smart Ringswitch Express. The 16-port Token Ring switch has switching capacity of 1.5G bit/sec. The system will be bundled free with Madge's TrueView administration software. It will ship separately in May and will cost $9,580.

Managing IBM boxes

Those who use enterprise management software from Tivoli Systems, Inc. now will be able to reach out automatically to care for IBM PCs, ThinkPads and NetFinity servers from IBM's Personal Systems Group. Those systems will ship with the Tivoli Management Agent to ease management of end points in large networks.

Voice Y2K-ready

Applied Voice Technology, Inc. in Kirkland, Wash., next month will ship an upgrade of its CallXpress voice and call processing system that is now year 2000-compliant. The new version of the system supports the Voice Profile for Internet Mail specification, which lets users exchange voice and fax messages across the Internet and corporate intranets.

Stand-alone security

NetScreen, Inc. in Santa Clara, Calif., last week released NetScreen-10, which combines firewall, encryption and traffic management functions into a stand-alone box that provides 10M bit/sec. Ethernet throughput.

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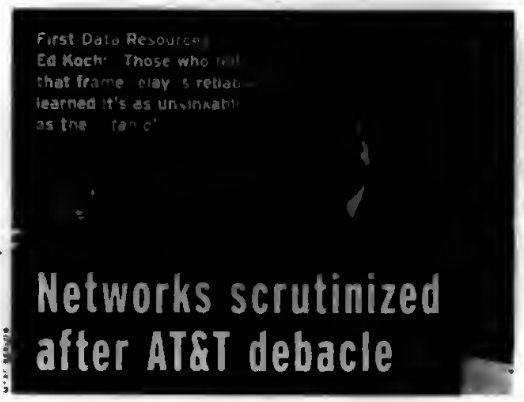

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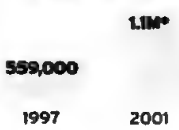

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Source: Dataquest, San Jose, Calif.

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Source: Creative Networks, Inc., Palo Alto, Calif.

AT A TIME LIKE THIS, THERE ARE SEVERAL THINGS YOU MIGHT FIND USEFUL.

Dive knife.

Depth gauge.

Shark repellent

Oxygen

AT&T network outage

CONTINUED FROM PAGE 57

ISDN service wherever it is available in the U.S. "Anybody who says ISDN is dead, I would beg to differ," he said, especially after AT&T's frame-relay network crashed on April 13.

Mellon Bank Corp. in Pittsburgh has deployed Bell Atlantic's ISDN to connect mortgage lenders to borrowers via video calls to 350 branches.

ISDN technology has been available in the U.S. for a decade, but it didn't catch on because of high prices and lack of availability, analysts said. But "it's everywhere in Japan and Europe, and they're even trying to hook it up to pay phones in Japan," said Lisa Pelgrim, an analyst at Dataquest in San Jose, Calif. She said ISDN "still has some growth left in it," especially for unusual applications such as those at Honor Technologies. With the rollouts of DSL and cable modems targeted at both consumers and businesses, "we see ISDN occupying a niche market," she said.

AROUND THE CORNER

Through 2001, ISDN terminal-adapter equipment will double in units sold (see chart, page 57), but revenue won't increase by as much because the price of the technology is declining, Pelgrim said. Even so, sales of analog modems will be about 57 times as great as ISDN terminal adapters in 2001.

Dataquest predicted the number of ISDN lines in the U.S. will jump from 1.6 million last year to 3.5 million in 2001.

Still, ISDN won't be "as exciting as DSL and cable modems," Pelgrim conceded.

Bell Atlantic has the largest deployment of ISDN lines of any of the Baby Bells, with about 400,000 in place, analysts said. Bell Atlantic also offers some of the lowest ISDN costs for business users — a flat monthly fee of $35, plus usage rates of up to 5 cents per minute.

Bell Atlantic isn't pushing ISDN over other technology, but it is selling it as one approach among many, said Richard Millstron, market manager for financial services at Bell Atlantic. □

Spectrum 5.0 release

CONTINUED FROM PAGE 57

overall service levels by looking at servers, applications and the internetworking pieces.

"We started with Spectrum primarily for network management, but it made sense to build on what works for us," said Craig Sterling, a network engineer at Allied Services, a rehabilitation center in Scranton, Pa. "Now we can divide up access easily to manage the network, PCs and applications, so eventually we can deal with everything through Spectrum."

"With [Version] 5.0, all teams will be able to work with the same repository to manage the 5,000-node network, its servers and services."
– Joe Capps, United Space Alliance

"With [Version] 5.0, all teams will be able to work with the same repository to manage the 5,000-node network, its servers and services," said Joe Capps, manager of network and desktop services at United Space Alliance in Houston, the contractor of NASA's shuttle program.

Analysts said Spectrum users are fortunate if they have the right selection of tools to plug in, such as Patrol, a popular manager of servers, applications and middleware from Houston-based BMC Software, Inc. They can get a head start comparing alerts to figure out what component is slowing down users.

"All the management suites are works in progress. None is complete yet," said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo. But Spectrum offers "a great nucleus" that can grow to "overlap the enterprise frameworks as users add to it," he said.

That's because Cabletron has cherry-picked strong service-oriented tools to build on a strong foundation of distributed design, an object-oriented repository and multivendor modeling, McConnell said.

YEAS AND NAYS

The University of Michigan Medical Center is "starting to watch everything but mainframes," said Kalpesh Unadkat, a computer consultant at the center in Ann Arbor, Mich. He said the medical center already uses Spectrum to gather information about Windows NT servers through a LAN manager called WinWatch from Metrix in Sophia Antipolis, France. It uses Patrol to monitor Unix servers. The combo then reports problems via trouble-ticket software from Mountain View, Calif.-based Remedy Corp.

Unadkat said he plans to manage databases and other applications by adding Patrol monitors. He plans to track service levels by adding a performance monitor from Gecko Software Ltd. in London. But he said he needs Spectrum 5.0's faster performance and automation of the discovery, console update and networkwide upgrade processes.

Cabletron is pulling together tools to cover all its users' needs for service management, said Jim Metzler, principal of The Metzler Group consultancy in Newton, Mass. "But even Cabletron won't claim they are near that goal yet," he said. □

CC:Mail

CONTINUED FROM PAGE 57

"I think a lot of [CC:Mail sites] are satisfied with what they have," said Eric Arnum, editor of "The Electronic Mail and Messaging Systems" newsletter in Washington. "Maybe that's why there are 14 million CC:Mail users."

"Before we learned about the year 2000 issues, we thought, 'What's the rush [to migrate]?' "
– Jonathan Lewis, National Park Service

Few users disagreed that Notes and Exchange make sense for large sites because they offer lower administration costs and can be extended to handle groupware. But E-mail migrations are costly and difficult, so sites tend to postpone them as long as the current system works well.

To spur migrations, Lotus recently offered a 30% discount and upgraded migration tools for customers moving from the older CC:Mail system to Notes.

Lotus also is prepping client software that can connect to a CC:Mail back end or a Domino server. That will let administrators move clients and servers independently. And Lotus has added a CC:Mail-to-Notes upgrade tool that supports the latest version of CC:Mail. Previously, the tool worked only with older versions of CC:Mail.

Microsoft earlier this month countered Lotus with an announcement that several of its third-party partners are offering discounts on their products and services for companies moving from CC:Mail to Exchange.

Some CC:Mail users — those who use the DB 6 CC:Mail database — will have to migrate soon because of year 2000 bugs that Lotus doesn't intend to fix. The company said about 60% of CC:Mail users use versions that aren't year 2000-compliant.

"Before we learned about the year 2000 issues, we thought, 'What's the rush [to migrate]?' " said Jonathan Lewis, a systems specialist at the National Park Service in Ventura, Calif., which has 17,000 users and is considering moving to Notes.

Lewis said Notes offers better remote management, but its client/server design will probably require the agency to move several of its E-mail servers to new locations. □

Networks

CONTINUED FROM PAGE 57

tion. "Losing the frame-relay cloud to 250 sites was devastating from an IS perspective, but we haven't yet felt the business ramification," said Scott Meyers, a senior account manager at Cargill, Inc. in Minneapolis.

Few of the agricultural supplier's field offices had dial-up backup connections to headquarters. Most users couldn't place orders, track accounts or send E-mail for hours. And some users lost those functions for a day or more, Meyers said.

As a result, more business units may decide they need to pay for backup, others may choose to "limp along" by telephone in such situations, he said.

The outage silenced client/server application exchanges across the WAN from nearly half the sites at one major oil company, said a network manager who asked to remain anonymous.

"After losing nearly 200 circuits for hours, we can no longer assume that a frame relay network is self-healing," he said. "Since so much client/server traffic now travels across our WAN, it will be easier for us to justify the cost of backup connections."

The outage slowed the pulse of the Washington-based American Red Cross network, which helps track the collection and distribution of about half the nation's blood supply.

Backup Integrated Services Digital Network (ISDN) connections took over within minutes to restore communication among nine data centers and 23 blood donor regions, so supplies to hospitals weren't threatened, said Tom Woteki, chief information officer at the Red Cross.

More businesses may decide they need to pay for backup, while others may choose to "limp along" by telephone.

"Management is happy that we could keep working during the peak donor period in the evening," Woteki said. Even so, he has been asked to review the adequacy of network protection.

Now Red Cross' IS group is evaluating whether it should invest in backup connections for 30 subsites on a case-by-case basis, Woteki said. And it may beef up bandwidth to improve performance the next time the Red Cross has to run that long on backup links.

SUCCESS STORY

The AT&T outage didn't affect the core network linking branch banks and automated teller machines for NationsBank Corp. That is because designers carefully split traffic among multiple long-haul carriers and local exchange carriers, said James Brown, senior vice president of network operations at the Charlotte, N.C.-based bank. Eighty credit offices that blacked out recovered within minutes via standby ISDN.

But diversifying traffic to assure availability can be a blessing and a curse, Brown said.

"We reduce risk, but dealing with so many carriers is complex," he said.

The bank's volume is so high, it can still get good rates when it scatters business among carriers, Brown said. "But smaller businesses don't have that luxury," he said. □

Software

Databases • Development • Operating Systems

Briefs

Worldwide workflow software revenue

1996	$395M
1997	$481M

Source: The Delphi Group, Inc., Boston

Java plug-in to ship

Sun Microsystems, Inc. in Mountain View, Calif., plans this week to ship its Java Plug-in software, formerly code-named Java Activator, which lets users specify the Java runtime environment in World Wide Web browsers. Java Plug-in can override the browser's native Java virtual machine (JVM) and replace it with Sun's JVM. Apple Computer, Inc. in Cupertino, Calif., has committed to Java Plug-in for the Macintosh.

Document manager out

NetRight Technologies, Inc. in Sunnyvale, Calif., this week will announce a three-tier document management product called Manage Network 4.0. In addition to client and server software, Manage has a middle tier that handles all access to databases and file servers. That eliminates the need to run SQL or Open Database Connectivity drivers on desktop machines. It is available now; pricing is $6,500 per server and $469 per client.

Win CE gets tracking

Square Corp. in Bellevue, Wash., has announced that ETrack for Windows CE-based handheld PCs will be available next month. The software comes with modules that track time, expenses and mileage. A free trial version is available at www.lsquare.com.

Mail server ships

Seattle Lab in Bothell, Wash., is shipping a mail server designed for Windows NT 5.0, which won't be released until next year. It also will run on Windows NT 4.0. It is being billed as the first E-mail server that can be programmed by end users.

Making manufacturing flexible

Gear maker smooths scheduling

By Craig Stedman

INFLATABLE MATTRESSES and other camping products may not be high on most shopping lists in the dead of winter, but Cascade Designs, Inc. can't stop making them just because no one is buying.

The Seattle-based company has to build up its product inventories all year long in order to have enough on hand during the spring and summer, when the number of orders it gets balloons fivefold.

But that leaves Cascade vulnerable to the uncertainties and risks common to makers of seasonal items.

For example, the cost of storing all that possibly useless inventory is an accountant's worst nightmare. And technology limitations make it hard to change the company's production plan when a catalog such as REI suddenly jacks up its order for collapsing water bottles.

RANDALL SCOTT

Cascade makes products like ski poles all year, but new apps promise better scheduling, says President John Burroughs

Cascade is trying to reduce the turbulence by installing an integrated set of finance, manufacturing and production planning applications. The goal, a more cost-effective production schedule that can be turned on a dime.

"Giant orders drop out of the sky all the time, and when they

Outdoor gear, page 63

Planning systems hit shop floor

By Craig Stedman

SOME BUILD-TO-ORDER manufacturers are eager to tie their shop-floor systems to production and supply-chain planning.

For companies such as Miller SQA, an office furniture maker in Holland, Mich., integrated scheduling and factory systems are expected to produce more refined manufacturing plans that can be changed on the fly if materials run short or other problems crop up.

Supply-chain planning products "might give you a fancy road map with all the directions you need," said Doug Bonzelaar, application development manager at Miller SQA. "But it's not much good if you can't drive the plan all the way through your plant."

Miller SQA's Doug Bonze... Supply cha... planning ... much g... ou can't d... the plan al... way through... your plant

Software vendors are starting to provide technology for executing supply-side plans. SynQuest, Inc. in Norcross, Ga., last week released a product that combines simulation and graphical modeling with its manufacturing execution technology.

Denver-based J. D. Edwards & Co. next month plans to announce links between its manufacturing software and SynQuest's optimized scheduler. It also will roll out applications that let users alter invoices and other supply-chain components as customer requirements change.

Miller SQA plans to install SynQuest's new Manufacturing Manager by summer. Bonzelaar said the advanced planning features should let the company's manufacturing schedule be weighted toward its top priority

Planning apps, page 63

Call logging improves service

By Randy Weston

IF A FARM EQUIPMENT dealer in Des Moines, Iowa, has a problem with a part for a New Holland, Inc. tractor, customer service agents at the U.S. arm of New Holland NV can respond before the cows come home.

The New Holland, Pa.-based maker of tractors, combines and other farm equipment recently implemented a customer service system throughout its four service offices to improve service and let representatives see the same information regardless of where they are.

A customer service system at farm equipment maker New Holland gives all agents access to the same information

"It gives the customer service agents a better idea of what is going on," said Lee Steinbeiser, customer services systems analyst at New Holland. "Our managers like it because they have a better grip on problems that are coming into New Holland and what dealers are experiencing in the field."

Each customer service office handles a different function: dealer parts, locating inventory,

Call logging, page 62

Call logging improves service

CONTINUED FROM PAGE 61

tractor repairs or dealer software system support.

New Holland has 1,500 dealers. Until now, each operated its own systems, and information couldn't be shared among the offices, Steinbeiser said. "Each group had its own way of logging in calls," Steinbeiser explained. "The inventory locator group used a paper-based system. They logged all the calls by hand on paper. The other three used homegrown systems, and all of them were totally different. No one could talk to each other, and no one had access to information other than those working in that group."

But that changed in December, when New Holland went live with a customer service system from Applix, Inc. in Westboro, Mass. "We now have the capability of seeing not only the calls but what calls [are] being logged in other groups," Steinbeiser said. "So if a dealer calls in about a particular problem, we can see if it was logged by another group."

Steinbeiser added that the company is seeing a return on its investment. It can log more calls without increasing staff, resolve problems more quickly and better head off problems by tracking trends.

About 70 people throughout the four offices are using the system. Steinbeiser said the company is rolling out Applix's sales force automation system to 500 regional salespeople. Sales managers will be able to log in to the system through a World Wide Web browser on their laptops and and slice and dice customer information to get a better idea of how to serve the dealers they support.

"They can see the status," Steinbeiser said. "Hopefully, it will give them more information so they don't go into a dealership and get blindsided by problems."

Company: New Holland NV

U.S. headquarters: New Holland, Pa.

Business: Agricultural equipment manufacturer

1997 revenue: $6B

Employees: 18,600 worldwide

Project: Using interaction software to tie four customer service departments together and connect remote sales staff

Salespeople now have to go to the New Holland offices and manually comb through logged calls to get the same information. So they do without.

Jack Gold, an analyst at Meta Group, Inc. in Stamford, Conn., said New Holland is right to stretch the system to its sales force. "Customer information is the key. It is the quantifiable product of all these systems," Gold said. "You want to take that information and do something meaningful with it."

Steve Bonadio, an analyst at Hurwitz Group, Inc. in Framingham, Mass., agreed. "Call centers need to be linked with sales forces, who need to be linked to marketing. And all need to have access to the same information," he said.

New Holland bought 95 licenses of the customer service application but is considering an enterprise license for rolling out the sales modules. Pricing for each of the two modules starts at $24,995. The integrated sales and service module costs $34,995, and the full suite costs $44,995. □

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Outdoor gear maker smooths scheduling

CONTINUED FROM PAGE 61

do, I want to be able to ship them," said Doug Jacot, director of operations at Cascade. "I don't want [a dealer] to have to back-order. But we're slower to react sometimes than I'd like to see."

Cascade's reflexes are so slow because its PC-based mix of homegrown and proprietary systems can be updated only once a month. And executives get only one giant order forecast that doesn't break out individual customers.

As a result, putting together a workable production schedule for the 900 or so items Cascade sells is largely guesswork now. "We shoot from the hip and go with our gut," Jacot said.

By contrast, the new applications should let executives do separate forecasts for Cascade's largest customers and then monitor manufacturing flow hour by hour, Jacot said.

HERE TODAY, GONE TOMORROW

Keeping manufacturing in sync with forecasts is a tall order for companies with big seasonal skews in their sales, said Byron Miller, an analyst at Giga Information Group in Cambridge, Mass.

"Some products are pretty faddish and are here one season and gone the next," Miller said.

Cascade plans next month to begin installing Denver-based J. D Edwards & Co.'s enterprise application suite on Windows NT servers and Microsoft Corp.'s SQL Server database.

Those systems will be tied to new Unix-based production planning software released last week by SynQuest, Inc. in Norcross, Ga. The $1.5 million project is due to go live in the fall, said John Burroughs, Cascade's president.

Inflatable mattresses, sleeping bags and other outdoor gear bring in 80% of Cascade's annual sales of about $50 million, and orders plummet to "almost zero" in the winter, Burroughs said.

Burroughs is willing to maintain high inventories in order to keep manufacturing going and avoid a continuous cycle of hiring, training and then firing workers. But the new applications should help rein in some inventory costs through better scheduling, he said. □

Planning systems hit the shop floor

CONTINUED FROM PAGE 61

of on-time delivery to customers rather than cost, for example.

SynQuest's software also will be used to automate the process of changing Miller SQA's production plan to work around factory problems without sacrificing productivity, Bonzelaar said.

SHRINKING TURNAROUNDS

Commonwealth Industries, Inc. is counting on SynQuest to enable its aluminum plants to guarantee delivery times and shrink order turnarounds from more than a month to one or two weeks.

"We might be sitting here thinking we're hitting a customer's delivery window when we're actually not," said Rick Richards, vice president of planning at Commonwealth's aluminum unit in Louisville, Ky. "It's pretty tough to keep track today."

Vendors such as SynQuest and J. D. Edwards are trying to differentiate themselves from supply-chain planning market leaders I2 Technologies, Inc. and Manugistics, Inc., said Joshua Greenbaum, an analyst at Hurwitz Group, Inc. in Framingham, Mass.

But despite lots of hype, use of supply-chain software "is still relatively small," Greenbaum added. "There are too many products chasing too few customers. It's extremely hard to set these things up." □

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Briefs

NT BACKUP

Revenue from Windows NT-based network backup software

1997 $368M
1998 $609M*
2002 $1.5B*

* Projected

Source: Strategic Research Corp., Santa Barbara, Calif.

Desktop revamp set

Compaq Computer Corp. has announced it will revamp its Deskpro line because corporate users have asked for more continuity in desktops. Compaq will refresh the EP line on a continual basis to offer the latest performance features, while the EM line will remain more constant.

2 pounds for $2,000

Panasonic Personal Computer Co. has introduced a 2-pound ultraportable notebook priced at $1,999. The CF-M31 features a 120-MHz Pentium MMX processor, an 8.4-in. active-matrix LCD screen and a 1.6G-byte hard drive.

DG heefs up its NT

Data General Corp. last week broadened its Windows NT server lineup with the AV 2650 and AV 2650R departmental servers. The systems come with single or dual 300-MHz Intel Corp. Pentium II processors, 512K bytes of cache per processor and support for up to 512M bytes of memory.

SGI results drag

One week after detailing a product overhaul and reorganization, Silicon Graphics, Inc. last week announced a third-quarter loss of $153 million, or $1 cents per share, on revenue of $708 million. That revenue figure is 22% lower than the $909 million SGI reported for the third quarter a year ago, when earnings were $11 million, or 6 cents per share. A First Call Corp. survey of analysts estimated SGI would post a third-quarter loss of 36 cents per share.

Y2K trips new AS/400 uses

By Jaikumar Vijayan

IBM'S ATTEMPT to get users to host new electronic-business, Java and Windows NT applications on its midrange AS/400 platform is striking a responsive chord among users.

But efforts to fix the year 2000 problem may be holding back many implementation plans, said users and user-group officers at the Common trade show in New Orleans last week.

Users are interested in the new AS/400 features, but they are waiting to see how to use them.

Common is an organization that represents more than 5,900 corporations — and more than 20,000 individuals — who use IBM's AS/400. Last week's event, which officials said was the second most heavily attended in the show's 37-year history, drew more than 4,200 users and more than 200 vendors.

At least part of the response can be attributed to IBM's continuing efforts to broaden the appeal of the AS/400, said David Dunne, president of Common and a vice president at a major financial services firm in New York.

IBM has done a very good job of promoting some of the new capabilities of the AS/400, Dunne said. "And it is continuing to make announcements around the platform," he said.

Those are among the reasons Rail Van, Inc., a transportation logistics company in Worthington, Ohio, is considering the AS/400 as a platform for electronic-commerce applications it may roll out later this year, said Tom Wessel, vice president of information systems at the company.

But fixing year 2000 glitches is taking precedence over new application deployment in many shops, said Cynthia Dajka, general manager of Common.

That is one of the reasons the group highlighted year 2000 issues, including year 2000 risk evaluation, planning, management, testing and tools, in the conference program. Other major focus areas included Java, the Internet and Windows NT integration, Dajka said.

IBM, which has made year 2000 a major focus across its product lines, already has released fully compliant versions of its OS/400 operating systems. It also offers tools for tasks such as impact assessment and code conversion.

Y2K, page 66

A sample of recent IBM efforts to broaden the AS/400's appeal:

Feature	What it does
Native support of Domino	Improves connectivity, allows easier access to legacy data on the AS/400 via Notes client
Integrated Web software/browser	Allows the AS/400 to be hooked into the Web
New development tools and an integrated Java Virtual Machine	Allows 100% pure Java applications to run without recompiling on the AS/400

Open storage systems help cut costs

▸ *Also reduce data-synchronization woes*

By Nancy Dillon

ALLSTATE INSURANCE CO. is counting on new open-systems disk arrays to ease storage management costs and trim off-line data-synchronization windows in the company's four main data centers.

The Northbrook, Ill.-based insurance giant is replacing 8.6T bytes worth of IBM Ramac storage with arrays that support direct connections to S/390, Unix and Windows NT hosts.

Allstate already has installed a few Symmetrix arrays from Hopkinton, Mass.-based EMC Corp. in all four of its data centers. It also has installed five 7700 arrays from Santa Clara, Calif.-based Hitachi Data Systems Corp. (HDS) in two of the centers. And new 7700E systems from HDS are being implemented across the four centers to replace all remaining IBM Ramac storage.

HDS announced the 7700E as its new high-end, general-purpose subsystem last week.

Open storage, page 66

OPEN SYSTEMS STORAGE

Vendor/Product	Platforms	Maximum cache	Online copy software	Concurrent I/O slots
Hitachi Data Systems/7700E	S/390, Unix, Windows NT	10G bytes	Shadow Image Copy (S/390 only)	32
EMC/Symmetrix 3700	S/390, Unix, NT	4G bytes	TimeFinder (S/390, NT, Unix)	32
IBM/Ramac Virtual Array	S/390 (and Unix & NT when using the IBM Cross Platform Extension	3G bytes	Snapshot Copy (S/390 only, unless using Cross Platform Extension)	16

REVIEW▸ *Palm III*

New PalmPilot: Don't ditch your laptop yet

By Howard Millman

THE NEWEST version of 3Com Corp.'s PalmPilot — the Palm III — is sleeker and easier to use than previous versions, but it still isn't an ideal mobile computer.

3Com has added memory, infrared links and more accurate handwriting recognition to the 6-ounce PalmPilot's core capabilities. Those include personal productivity utilities such as a calculator, address book, "to do" list and expense tracking.

3Com has improved the PalmPilot, but display problems and Windows CE competition may hamper popularity

THE RIGHT LIGHT

However, the coarse dot-matrix display is still hard to read under most lighting conditions.

The contrast control and backlighting can compensate for some variations in lighting, but all too often I had to angle the display to read it or even

PalmPilot, page 67

Open storage

CONTINUED FROM PAGE 65

The RAID array has a maximum capacity of 3T bytes, can incorporate new 12,000-rpm, 6G-byte Hitachi drives and works with S/390, Unix and NT servers (see chart page 65).

In one test with Allstate's life insurance application, the 7700E cut three hours off the overnight batch runtime previously needed by the Ramac. And the company expects further savings related to efficiency.

"The fewer devices you have, the better off you are," said Warren Wessling, senior manager of technical support. "You don't have to worry so much about unique system-management processes from one platform to the next."

Along with the 7700E, HDS announced software for creating quick copies of mainframe production data online. The Shadow Image Copy software is due by the end of the year. Remote Copy for Open Systems, which can replicate Unix and NT data between geographically dispersed centers, is due later this year. Remote Copy for S/390 was introduced in 1996.

Karl Huf, vice president of mainframe systems at Northern Trust Co. in Chicago, said he is happy to see Remote Copy for Open Systems. He recently purchased two HDS 7700E systems and already uses Remote Copy for S/390 in preparation for a data-center relocation. The software will enable the bank to mirror its most valuable open-systems and production data among three data centers for faster disaster recovery, he said.

The 7700E's 10G-byte cache, the largest in the market, also attracted Huf. "Today, we go with 4G bytes of cache for every 720G bytes of storage. If we grow to fill up all 3T bytes of the system, we'll need that extra cache," he said.

John McArthur, an analyst at International Data Corp., said the 7700E will enable HDS to better compete with market leaders EMC and IBM. He said its Shadow Image Copy software addresses the needs of users who want to make copies of production data without bringing their systems down. □

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Y2K trips IBM's new AS/400 uses

CONTINUED FROM PAGE 65

Although such tools and services help users address year 2000 issues, many are are just starting to resolve the problem.

At the same time, IBM has also been aggressively promoting electronic-business applications on the AS/400 by integrating support for things such as native versions of Lotus Development Corp.'s Notes and Domino and a Java Virtual Machine as well as by bundling Web server and browser software.

The company also has been trying to lower costs, improve manageability and provide users with more hooks to tie the proprietary AS/400 more tightly into PC-based networks. The Integrated PC Server feature on newer models of the AS/400, for example, allows users to host and manage native Windows application directly on the AS/400.

And the introduction of the AS/400E Server 170 in February is part of a plan by IBM to reduce entry costs. The model, which starts for less than $10,000, comes with either one or two processors and features Peripheral Component Interconnect technology, which makes it easier to connect the AS/400 to other devices. □

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PalmPilot: Don't ditch your laptop yet

CONTINUED FROM PAGE 65

had to move my seat to find the right lighting.

With the new release, 3Com has made the unit's menu more intuitive, and it has improved the accuracy of the Graffiti handwriting recognition software. I achieved about a 95% accuracy rating with Graffiti, which was adequate.

Nevertheless, writing on glass with a stylus still feels unnatural and takes more time than writing in a paper organizer.

Unless you want to tap out letters one at a time on an on-screen keyboard, you have to put up with the new characters and symbols Graffiti requires, but that's a mild imposition.

GETTING TO KNOW IT

After a period of familiarization, the unit is easy to use.

A new, built-in infrared port can "beam" data, such as business-card information, to another Palm III, a feature that I believe has little use in the real world, outside of sharing test answers in high school.

PRODUCT REVIEW

OVERALL B GRADE

▶ *Palm III*

3COM CORP.
Mountain View, Calif.
(800) 881-7256
www.3com.com

Price: $399; $75 rebate for trade-in

Pros: Lightweight; accurate handwriting recognition

Cons: Monochrome display is hard to read; entering text is time-consuming

The Palm III uses a flash RAM that will enable purchasers to upgrade the operating system in the future.

The 2M bytes of memory in Palm III is double the previous version. It holds about 600 addresses, 3,000 names and 200 E-mail messages.

EXTRAS AVAILABLE

Aftermarket vendors offer 2M-byte add-in modules that raise the total memory to 4M bytes.

Standard memory may be enough if you plan to use the device only as a personal information manager. But you should probably upgrade if you plan to run the limited-function corporate applications promised by third parties such as Oracle Corp., Sybase, Inc. and Lotus Development Corp.

Optional E-mail utilities synchronize the Palm III with popular desktop mail clients such as Qualcomm, Inc.'s Eudora and Microsoft Corp.'s Outlook.

Those utilities work fine in combination with 3Com's optional $129, 14.4 bit/sec. snap-on modem, allowing you to use the Palm III as a stand-alone communicator to access your existing Post Office Protocol 3 and Internet-mail accounts.

Some third-party E-mail add-ins require you to open a new mailbox, an unnecessary bother.

But even as a personal information manager, the Palm III still has issues. The looming question surrounding the Palm III is whether it can retain its lead against a slew of similar-sized devices that run Microsoft's Windows CE operating system, most of which have color displays that are easier to read than the Palm III's display. □

Millman operates the Data System Services Group, a vendor-independent consultancy in Croton, N.Y. He can be reached at (914) 271-6883 or hmillman@ibm.net.

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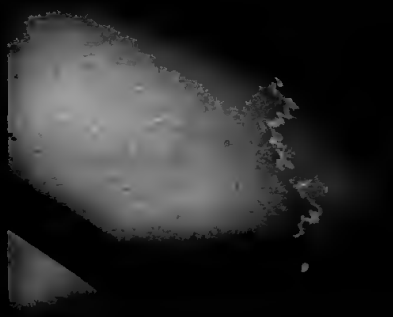

UNIX s t m x p a r t S
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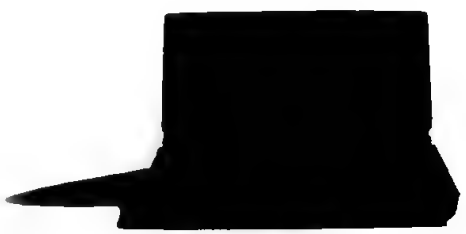
Powered by
Microsoft
Windows CE

Stay in touch, on the go, with Windows CE 2.0



Why are companies like Litton/PRC and Vail Resorts adopting the Microsoft® Windows® CE 2.0 platform? Because their employees need information at their fingertips, whether at their desks, at home, on the slopes or anywhere in between. And with PC Companions, such as Handheld PCs and Palm PCs, powered by the Windows CE operating system, they have the perfect platform for mobile information access.

Here's why: Windows CE 2.0 makes them feel at home, with the familiar Microsoft Windows interface, Pocket versions of their favorite applications and ActiveSync™ technology for effortless, bidirectional data sharing synch between desktop and the road. With e-mail, scheduling, tasks, calendar, contacts and Pocket Internet Explorer built-in to the Palm PC and Handheld PC (H/PC) and Microsoft Pocket Word, Pocket PowerPoint® and Pocket Excel also built-in to the H/PC, Windows CE lets them be productive right out of the box.

Users like its familiar feel, so do the information professionals who support them. With open standards, extensive connectivity options and hundreds of off-the-shelf programs, Windows CE-based products feature the supportability and extendibility IT (information technology) professionals count on.

All this is available today, from dozens of hardware vendors. Here's how two companies are using Windows CE–straight out of the box–so that their employees can work on the run.

Litton/PRC

How do executives stay up to date no matter where they are, at Litton/PRC, a large federal information technology contractor? They let their Handheld PC handle it. With this small computer powered by Windows CE, management can access the day's sales, current employee retention numbers, or even how many new employee requisitions are open.

It's all made possible through Mobile Pedestrian (MOPED), an executive information application available on Litton's company intranet. A wide variety of company performance metrics are available through MOPED, which employees access through launching **Pocket Internet Explorer** on their Handheld PC, then selecting the MOPED intranet site. For even faster access, users can choose this site as a Favorite for almost instantaneous viewing. At a meeting and need some numbers to answer a colleague's question? No problem. Just think, no more time spent rounding up information to e-mail it later. Instead, it's at your fingertips with MOPED and a Handheld PC.

And it didn't take a rocket scientist to make the application run on Windows CE. Said Randy Allen, chief engineer for Litton/PRC, "The cool thing about it is that we didn't have to do anything to the Handheld PC. The Web

www/microsoft.com/windowsce/itsolutions/

browser is all we need. The only thing we've actually done on the Handheld PC is build forms in HTML."

Vail Resorts

Handhelds on the ski lifts! Yes, it's true. Vail Resorts in Colorado is using Handheld PCs powered by Windows CE to schedule ski school instructors in real time and in real snow. Handheld PCs are small and durable enough to fit in a jacket pocket, and powerful enough to run the Pocket Ski School scheduling application, which uses radio frequency wireless Ethernet to connect to an SQL Server™ database. And because Handheld PCs **run Windows CE, there's no learning curve,** either for the users or the developers.

The users in this case are the ski school instructors, who teach at the largest ski school in North America. Supervisors need to know which of the 1,500 instructors are booked on private lessons, and for those lessons, the instructors need to know the guest's name, where to meet them and what kind of lesson is expected. The Pocket Ski School does all that and more. Now, at a glance, supervisors can know the status of any instructor, whether they went home with the flu or whether they moved from full- to part-time status. Thus, they can make better, more efficient staffing decisions for better skier service.

The H/PCs made the developers happier, too. **Using the development system they already know—Microsoft Visual C++®—** the IT staff at Vail wrote the application to run SQL queries from the Handheld PC to the host network. Said Mark Roebke, senior programmer at Vail Resorts, "With MFC for Windows CE, we are able to leverage our existing knowledge of writing Windows applications to quickly produce powerful solutions for the Handheld PC. And the common user interface exposed by Windows CE allows us to create applications that are extremely easy to learn and use."

To move most of the processing off the Handheld PC, the developers created a Windows Socket host on the network that does most of the interaction with the SQL Server. As a result, supervisors can update and view the scheduling database, all in real time.

Users like its familiar feel; so do the information professionals who support them. With open standards, extensive connectivity options and hundreds of add-on programs, Windows CE products feature the supportability and extendibility IT professionals count on.

Instead of relying on 10 sheets of paper stuffed into pockets, **supervisors can send instant queries to an SQL Server database over wireless Ethernet.** Supervisors can spend more time outside with guests and instructors, and less time going inside to update the database. Skiers also get better service, because their instructors know where to find them, when. How's that for the personal touch?

Custom applications at hand with Windows CE

PC Companions can quickly turn into an organization's unique tool, as pharmaceutical giant Hoechst Marion Roussel and the Pittsburgh Police Department have found. These organizations have developed custom applications that run on Windows CE, all utilizing existing Windows-based development expertise.

Organizations like these need unique types of applications and information specific to them. But like all companies, they want information at hand, wherever they go, quickly. And they don't want to spend a lot of time getting up to speed on new systems. That's why Windows CE-based platforms are a good deal for custom development.

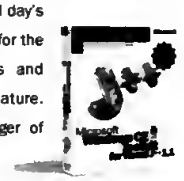
Windows CE **uses the same Microsoft Win32® application programming interface (API), visual tools and development expertise that developers for Windows are already familiar with.** That means there's no extra learning curve. In addition, code written for desktop PCs can be quickly ported to Windows CE.

Both independent developers and internal IT people agree: it makes sense to **take advantage of existing expertise to create portable applications.** And it makes sense to write for platforms that are well-supported and will be there tomorrow. Which points to Windows CE as the development platform of choice for custom mobile applications.

Hoechst Marion Roussel (HMR)

You're a high-powered sales rep for a global pharmaceutical company. Your customers—busy physicians—give you about two minutes of their time to hear your presentation and sample products. You need to grab their signature in the clinic and then send information and the signature into headquarters. If you work at HMR, you use in-house developed TIM Jr., software—running on a Handheld PC—for managing the distribution of prescription drug samples.

Doctors don't have to wait on HMR reps, because Handheld PCs have the battery life for a full day's work and turn on instantly, ready for the custom software that digitizes and captures the physician's signature. Explains Kevin Greenlee, manager of



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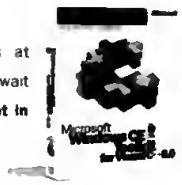


Commercial Information Systems at HMR, "The physicians don't want to wait on us. The H/PC allows reps to **get in and out fast, so they don't lose an opportunity."**

Then headquarters doesn't have to wait, either, because the call and sample information, as well as the signature, are **instantly synched** with the laptop via a serial cable and proprietary synch software.

Developing TIM Jr. was a cinch, because it was based on a laptop version that was easily ported to the small, lightweight H/PCs. Using TIM Jr. is likewise no problem, because the reps were familiar with the laptop version running on Windows 95.

Because using TIM Jr. on an H/PC can save each rep a minimum of five minutes on each sales call, they can **make more of them, and make the company an extra $5 million a year,** due to increased efficiency and volume. That kind of money can come in pretty handy.

Pittsburgh Police

What's the most dangerous part of being a police officer? Walking into a situation without information. But now the cop walking the beat has **almost instant access** to the city, state and federal crime databases at hand, with a City of Pittsburgh application for Handheld PCs.

• Does a suspect have outstanding warrants? Using a small wireless modem, the Handheld PC can quickly connect via Microsoft BackOffice®-based servers to Pittsburgh's local database to check. In 10 seconds, the police officer knows.

• Is a car stolen? Using the cellular digital packet data (CDPD) infrastructure, with encryption on both ends, the police on the street can securely tap into the Commonwealth of Pennsylvania's vehicle and driver registration databases to find out.

• Is a speeder also a dangerous criminal? The law enforcement agent can find out quickly and easily by **tapping into the FBI's crime computers through a familiar interface.**

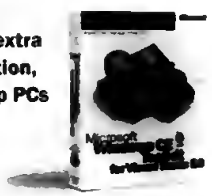
Before the advent of the H/PC database application, police called in their plate requests to a dispatcher, who was often backlogged up to 20 minutes. That 20 minutes could spell danger as a police officer approached a car without knowing what he was getting into or could allow the suspect to get away. But now, police practically have the resources of their whole office with them, on the street corner, in less than 10 seconds. And because Handheld PCs turn on instantly, the police can get the information they need to prevent crime, faster.

Says Steve Schmitt, CIO for the City of Pittsburgh, "The Handheld PC is able to provide information to police officers where and when they need it. They can pull it right out of their pockets on a street corner and run a plate."

Writing the database application for the Handheld PC was a simple process. The city used existing development environments and knowledge to **quickly port the desktop version to the Handheld PC.**

"We like Windows CE because we can extend the manageability of our Windows 95-based desktops to the wireless environment," says Steve Schmitt, CIO for the City of Pittsburgh. "The Handheld PC is able to provide information to police officers where and when they need it. They can pull it right out of their pockets on a street corner and run a plate."

That means there's no extra learning curve. In addition, code written for desktop PCs can be quickly ported to Windows CE.



embedded systems

Specialized devices have long been developed with proprietary operating systems. The drawbacks?

- **Steep learning curves for development tools and operating systems (OS).**
- **Little compatibility or connectivity between devices.**
- **No standard APIs**

Windows CE, on the other hand, is the ideal operating system for embedded systems. It's the most **usable embedded operating system available,** featuring:

- Familiar development tools and environments, including the Windows CE Embedded Toolkit for Visual C++® and Win32® API
- Rich support for connectivity and interoperability between devices, PCs, servers and the Internet
- Libraries of services, such as GUIs and controls
- A modular design that enables componentized software

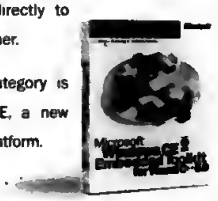
"Usable" means you can take advantage of knowledge, code, tools and add-ins that already exist, rather than create it all from scratch. This means **faster time to market and lower development costs** for all kinds of specialized systems.

Radiant Systems discovered the Windows CE quick-time-to-market advantages when creating a Windows CE-based retail platform. DATUS found that Windows CE offered lower development costs for its car navigation system. They are just two of many companies designing their embedded systems around Windows CE 2.0, the operating system that can take advantage of tools, code and expertise developers already have.

Radiant Systems

Point-of-sale (POS) systems are a staple in the retail world. And increasingly, retailers are also using interactive kiosks to present in-store information directly to consumers in a compelling manner.

An innovative entry in this category is Radiant Systems' MediaClient-CE, a new Windows CE 2.0-powered retail platform.



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Used as a mini-kiosk, the device can be tailored to a wide variety of promotional needs, since it supports a built in touch-screen and a magnetic stripe reader for swiping credit cards. Its versatility doesn't stop there: As a POS, MediaClient-CE supports a wide range of retail environments through its connectivity to a variety of retail peripherals such as scanners, PIN pads, and cash drawers. With 100BaseT networking, it provides high-speed connectivity to local media servers and the home office.

Store employees and consumers alike find the Windows and multimedia UI provided by the MediaClient-CE completely intuitive. They will also appreciate the quality of video made possible by the kiosk's support of the MPEG standard.

The developers who created MediaClient-CE cited **two key benefits from using Windows CE—openness and compatibility.** Because MediaClient-CE was developed within a familiar development environment, developers had a higher level of confidence in the resulting application. And because MediaClient-CE is based on an established standard from a leading operating system supplier, the developers could be assured their kiosk would be compatible with other Windows-based platforms.

"Windows CE offers a reliable platform based on the same standards as that of a mass-market success like Windows NT® – yet it's customizable to meet the needs of the vertical market," said Jimmy Fortuna, product manager for advanced platforms at Radiant Systems. "This is exactly what our customers need."

In the highly competitive world of retail merchandising, the race is to the swift and creative. Windows CE let Radiant Systems be both.

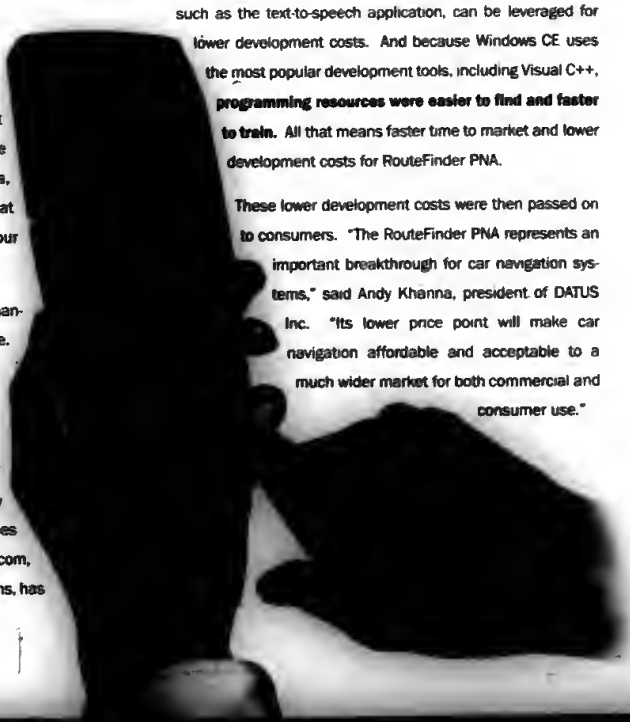
DATUS

Getting lost in an unfamiliar town or city can be one of life's aggravations. That's why car navigation systems are one of the hot new embedded systems helping sell luxury vehicles today. DATUS, a subsidiary of Daewoo Telecom, Ltd. and manufacturer of car navigation systems, has introduced RouteFinder PNA, an all-in-one portable car navigation system powered by Windows CE 2.0, that makes getting lost (or suffering the humiliation of asking directions) a thing of the past.

RouteFinder PNA provides address-to-address route generation and turn-by-turn driving directions. It does this through a global positioning system (GPS) receiver that takes satellite information and pinpoints a person's current location. Then, through text-to-speech voice instructions, RouteFinder PNA directs the driver to the correct route. As the driver approaches each turn, the device speaks the instruction, such as "Turn right on Harbor Lane, drive 0.5 miles."

The RouteFinder PNA development team used the Windows CE Embedded Toolkit for Visual C++ to adapt the Windows CE operating system to their hardware platform. The software developers were then able to build and debug the software for the RouteFinder PNA from inside the familiar Microsoft Visual C++ development environment. What's more, the Windows CE operating system is based on the industry standard Win32 API, making it easy for the developers to reuse their code base across other Windows projects. That means existing services, such as the text-to-speech application, can be leveraged for lower development costs. And because Windows CE uses the most popular development tools, including Visual C++, **programming resources were easier to find and faster to train.** All that means faster time to market and lower development costs for RouteFinder PNA.

These lower development costs were then passed on to consumers. "The RouteFinder PNA represents an important breakthrough for car navigation systems," said Andy Khanna, president of DATUS Inc. "Its lower price point will make car navigation affordable and acceptable to a much wider market for both commercial and consumer use."



Windows CE brings information at hand—

no matter what you're handy at.

Whether you want to use Windows CE out of the box via PC Companions, customize applications for them or embed the operating system into a specialized device, you'll find it an ideal environment. It's as easy to use as Windows, uses familiar development tools and features all the standard connectivity and extendibility people have come to expect from Windows.

For users of H/PCs and Palm PCs powered by Windows CE, they'll find it easy to access their desktop data and stay in touch from anywhere, due to their automatic synch and wireless capabilities and familiar Pocket applications.

For IT departments supporting users of PC Companions, they'll enjoy the fact that they:

- Don't have to retrain users in either using the GUI or the applications,
- Can utilize PC source code,
- Can manage PC Companions just the way they manage desktop PCs, and
- Are using a standard technology supported by a long-term player.

For developers customizing applications for Handheld PCs and Palm PCs, they'll appreciate the quick learning curve and the ability to apply their existing Windows development expertise to applications for Windows CE-based devices.

And for embedded systems programmers, the ability to take advantage of the connectivity, interoperability and existing code and services, as well as a modular OS, will help them get to market with their specialized devices faster and more efficiently.

Where to turn for Windows CE-powered products?

PC Companions powered by Windows CE come in many designs and with customized features. Multiple hardware partners offer Handheld PCs and Palm PCs.

For more information about how to license the Windows CE operating system, or where to purchase PC Companions and Microsoft development tools for Windows CE, please visit: **www.microaaft.com/windowsce/itsolutions/**.

While you're there, check out ordering a free kit that includes additional information about Windows CE-based products and the operating system. Simply fill out an online form, and we'll send it to you.

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IT people to watch

ROLL OVER GATES, Gerstner, et al. It's time to share the spotlight with the information systems executives, Web-preneurs and Beltway power lunchers who will be shaking up the information technology world — or be shaken by it.

Why watch these people? Some of them, such as GM's Ralph Szygenda and Citicorp's Ed Horowitz, shoulder some of the biggest challenges in the IS world. Young revolutionaries such as Jeff Bezos at Amazon.com and Jeff Geltz at Allenergy Marketing are reinventing their industries. Want influence? Try Randy Mott at Wal-Mart and Ira Magaziner, President Clinton's IT policy czar. Others are running bellwether year 2000, object technology, outsourcing and human resources initiatives.

IS isn't just an interesting profession, it's full of interesting people, too. And it's time they too stepped into the business limelight.

BILL SCHURG

RALPH SZYGENDA

Managing IT challenge

TITLE: CHIEF INFORMATION OFFICER AGE: 49 COMPANY: GENERAL MOTORS CORP., DETROIT

Szygenda knows his job of rebuilding the technology universe at the world's largest company puts him squarely under the microscope.

And he wouldn't have it any other way. "I love challenges, and I love to win," Szygenda says.

What makes him tick? "Doing the impossible," he says. "Or what people think is impossible."

The situation at GM comes close. Szygenda must create a technology management organization from scratch, install common systems, fix a massive year 2000 problem and use systems to help chop new-car development times nearly in half. At the same time, he must slash annual technology spending by hundreds of millions of dollars.

Since Szygenda's arrival in mid-1996, he has hired 300 of the 500 technology managers who will oversee GM's small army of outsourcers. Financial systems are being standardized on SAP AG's R/3, data warehousing plans are in place and contract renegotiations already have saved about $200 million, Szygenda says.

Szygenda doesn't downplay the difficulty of the situation. The entire information technology changeover will take years, but his 1998 plan calls for a technology-driven business change to start becoming visible.

"A lot of people are watching," he says. "I think we're definitely the model that will be the norm in all companies 20 years from now."

— Craig Stedman

SPECIAL REPORT

25 IT PEOPLE TO WATCH

KATHY BRITTAIN WHITE

TITLE: CHIEF INFORMATION OFFICER
COMPANY: ALLEGIANCE HEALTHCARE CORP., MCGAW PARK, ILL.

FROM PROFESSOR TO POWERHOUSE. "I have a track record of taking quantum leaps," White says. And how. In 1990, the University of North Carolina IS professor became CIO at a textile company. Three years later, she was vice president of IS at a $4 billion division of AlliedSignal Corp. Two years later, she landed at $10 billion Baxter International. When Baxter spun off Allegiance in 1996, the IT function and White went with it.

Allegiance Chairman Lester Knight says White's teaching and consulting acumen are invaluable in keeping the businesspeople on board as she drives the changes the company is facing. White is implementing Allegiance's $100 million Horizon project that will replace every legacy system built in the past 30 years. Another project is the Customer Technology Center, where potential customers can play with showcased technologies. "If I knew at 21 what I wanted to do, I would have gone into a line so I could have run a business," she says.

Who knows? Maybe that's her next quantum leap. — *Kathleen Melymuka*

DOUG LABODA

TITLE: CIO AND VICE PRESIDENT OF IS
AGE: 45
COMPANY: CLAIMS SERVICES UNIT AT TRAVELERS PROPERTY CASUALTY CORP., HARTFORD, CONN.

AT THE OBJECT WHEEL. Doug LaBoda is a sports-car buff who did some competitive driving in his younger days.

But that wasn't much more challenging than figuring out how to use object technology to cut business costs at Travelers Property Casualty and making it easier to add claims-handling capabilities designed to set the insurer apart from competitors.

"It was a wild ride," LaBoda says.

When The Travelers Group subsidiary went live with its first object-based application in early 1994, the software was barely beyond beta quality. Four years and about $27 million later, Travelers Property Casualty has three object-based applications in production. Software development costs fell from $7 million on the first application to $500,000 on the third, LaBoda says.

The company's ambitious goal is to roll out the object-based applications to its 6,500 claim handlers by December. His wild ride may not be over yet.

— *Craig Stedman*

IRA MAGAZINER

white house's web head

TITLE: SENIOR ADVISOR TO PRESIDENT CLINTON FOR POLICY DEVELOPMENT AGE: 50

Yes, this is the same Ira Magaziner who masterminded the national health care disaster during Bill Clinton's first term. But Magaziner says he's adopted a new style as master craftsman of national policy on electronic commerce.

Magaziner took heat for drafting health care policy behind closed doors. But his proposals on Internet taxation, privacy, encryption and other matters, which were published last July, went through 18 drafts — all posted on the Internet (*www.ecommerce.gov*).

"We got hundreds of comments from people we normally wouldn't have heard from in Washington," Magaziner says. "Fifty or 60 of the suggestions went into the final draft."

Privacy advocates complained the proposals didn't go far enough to protect their interests. And no one except law enforcement officials liked the White House's commitment to "key recovery" encryption, which would let the government decode private messages with court approval.

But the July 1 manifesto, unlike the health care plan, took a strong free-market stand on Internet matters: no new taxes, spending, laws or regulations. People applauded that.

In January, Magaziner outlined White House proposals for turning over Internet administration — including the registration of domain names — to private hands by Sept. 30. The plan (on the World Wide Web at *www.ntia.doc.gov*) is controversial among those companies vying for a piece of the action, but users generally support it.

Michael Roberts, networking vice president at Educom in Washington, says he'd give Magaziner a B+ or A-. "Considering the 60 zillion loose ends he started out with, he hasn't done a bad job," he says.

— *Gary H. Anthes*

DOUG HOFFER

CHARLIE FELD

reinventing himself — again

TITLE: CHIEF INFORMATION OFFICER AGE: 53 COMPANY: DELTA AIR LINES, INC., ATLANTA

Feld earned a reputation as a highly effective and highly likable information technology troubleshooter well before he took on his latest challenge: reinventing Delta's IS organization and rebuilding the morale of its 2,500 staffers.

Delta's IS group was outsourced under a joint venture with AT&T Corp. but was brought back in-house in 1996 after AT&T spun off its outsourcing business. It now is operated as a wholly owned Delta subsidiary.

Feld's plan is to apply a leadership and business model he honed while at top IT posts at Frito Lay, Inc. and Burlington Northern Santa Fe Railroad.

Feld's career dream has been to launch an IT leadership center — a sort of graduate program for CIOs, Delta agreed to support such an institute during Feld's scheduled two-year tenure.

At the heart of Feld's leadership philosophy is a belief that "you've got to run IS like a business." That means you have to monitor IT's performance much like a company's financial performance and continually recalibrate budget, systems development and other technology plans accordingly.

Feld already has started to rebuild morale among IT staffers on whom the earlier outsourcing had a "stressful" impact, according to Feld's boss, Delta technology CEO Paul Matsen. — *Julia King*

IRENE DEC

getting your 2000 right

TITLE: VICE PRESIDENT, YEAR 2000 PROGRAM DIRECTOR AGE: 42 COMPANY: PRUDENTIAL INSURANCE COMPANY OF AMERICA, NEWARK, N.J.

Dec is running what is widely considered to be the best year 2000 project in the country.

"There's no guarantee that any organization will be fully successful with year 2000," says software development expert Ed Yourdon. "But if any companies do succeed, I'm confident that Prudential will be at, or near, the top of the list."

Dec, a former math teacher, has a near-obsessive dedication to methodology, which is the foundation of her success. "I have built the year 2000 project around that," she says.

"She's very good at process and very focused on results," says CIO Bill Friel. "Irene can take an amorphous set of issues and break them down into specific objectives so that people can understand with clarity what is expected of them."

Prudential began addressing the year 2000 problem in 1995, and remediation is nearly finished. Dec's continuing challenge: Keep the pressure on for the following phases. Dec currently is focusing on compliance among Prudential's 1,500 hardware and software vendors and 300 other critical business partners. She also will be getting deep into contingency planning, looking at risk areas and determining how the company should react. — *Kathleen Melymuka*

BRAD CROWHURST

JOHN A. KOSKINEN

TITLE: CHAIRMAN, PRESIDENT'S COUNCIL ON THE YEAR 2000 CONVERSION AGE: 58

EYE OF YEAR 2000 STORM. Koskinen, who calls himself a crisis manager, has a tough and thankless job.

He acknowledges that if all goes well preparing Uncle Sam's 68,000 computer systems for Jan. 1, 2000, hardly anyone will notice. But if some of the 8,000 mission-critical systems choke on the date change — something most see as inevitable — "everyone knows who's holding the bag," he says.

The federal Office of Management and Budget recently issued a report card on the government's year 2000 efforts; the grades aren't good. Two-thirds of mission-critical systems aren't yet compliant, and five of the largest agencies were judged as making "insufficient progress." The OMB raised its November cost estimate for federal year 2000 work by $800 million to $4.7 billion.

Koskinen was formerly president of The Palmieri Co., which restructured troubled companies. The Phi Beta Kappa graduate of Duke University helped rescue financially distressed firms. — *Gary H. Anthes*

CHARLES BAUMANN

TITLE: VICE PRESIDENT OF INFORMATION TECHNOLOGY AGE: 37 COMPANY: CIGNA INTEGRATEDCARE, PHILADELPHIA

LEADING AND LEARNING. Baumann happily puts in 60- to 65-hour workweeks. "I'm a learnaholic," he says. "I have a thirst for learning — it's fun."

He's been having a lot of fun lately. In the past year, his IntegratedCare team has continued developing a claims system that lets users file disability claims into a centralized, integrated single-entry system. "My role is to lead our technology development and to demonstrate the value of our system integration to customers," he says.

Baumann also has a new leadership role as vice president in Managed Disability at Cigna Corp. and has been charged with continuing the integration of the company's HealthCare, Group Insurance and Property and Casualty divisions. "Our goal is to collaborate, not replicate what each division is doing," he says. "Cigna is one of the only multiline [health care, disability and workers' compensation] carriers with everything under one roof. Fully integrating these divisions will put us in a unique position in the market."

CHRISTOPHER BUSH

Baumann's position already has provided him with new perspectives on how the business operates. "I'm learning the business in much greater depth than I had just from my IT perspective," he says. And to Baumann, that's fun. — *Stewart Deck*

Continued on page 76

internet = catch

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STEVE HENRY

TITLE: SENIOR VICE PRESIDENT, INFORMATION TECHNOLOGY
AGE: 40 **COMPANY:** TIG INSURANCE GROUP, IRVING, TEXAS (A UNIT OF TIG HOLDINGS, INC. IN NEW YORK)

A Bare-Bones Staff. Every leader dreams of running an organization with a clean sheet of paper. But with a skeleton crew to boot?

That's a challenge facing Henry, the pragmatic senior vice president of TIG, a specialty property casualty insurer that was spun off from Transamerica Corp. in 1993. In July 1996, TIG outsourced the bulk of its IS operations to IBM — 113 of the staffers elected to join Big Blue and another 29 left of their own volition.

That leaves Henry with seven people on TIG's payroll to help set IT strategies, eyeball new business opportunities and manage the IBM relationship. That includes himself, a secretary, a few network and desktop administrators and a controller.

"He's got the whole weight of the world on his shoulders," said Don Goldstein, director of systems technology at TIG, who describes Henry as "very intense" and "detail-oriented."

TIG continues to own its hardware and software assets, while IBM provides facilities management for the data center, help desk support and desktop and network services.

— *Thomas Hoffman*

IETF

INTERNET ENGINEERING TASK FORCE
AGE: 12
LOCATION: CYBERSPACE (http://ietf.org)

Insecure Over Security. Newton, Mass.-based online business strategist Rob Raisch describes the Internet Engineering Task Force (IETF) as "chaos." However, he adds, it is "surprisingly well-managed chaos."

U.S. businesses hope the IETF can manage to finalize a universal standard for secure messaging. Such a standard would make it easy and cheap to guarantee electronic communications privacy — a must, experts say, if the Internet's commercial potential is to be realized.

Two IETF subgroups have been working on standards (called S/MIME and OpenPGP) that, although dandy in their own right, won't work together. Neither users nor vendors know which to adopt. As a result, most are sitting and waiting. Fred Baker, IETF chairman, agrees that resolving this security work is vital.

Raisch says, "The Internet is the largest agreement the world has ever known, and the IETF is the arbiter of the agreement." Arbiter, arbitrate thyself. — *Steve Ulfelder*

TERRELL B. JONES

TITLE: PRESIDENT, SABRE INTERACTIVE; CIO, SABRE GROUP, INC.
AGE: 49 **COMPANY:** SABRE GROUP, INC., DALLAS/FORT WORTH, TEXAS

Off the bat, Jones' boss describes this man, who almost bought a boys' camp in the Canadian wilderness, as having a zest for life. He calls him a facile speaker who talks better off-the-cuff than most people can with a text in front of them.

"Because of his very broad experience in managing a technical staff but also in running a business operation, Terry can somewhat uniquely see the way that technology can fit together and meet the business needs of a company as opposed to what is just technologically feasible," says Sabre Group President and CEO Michael J. Durham. "That's a real gift."

But in the Internet, Jones — a onetime travel agent who moved into travel-related computing 20 years ago — may have met his match. Although sales from the Travelocity World Wide Web site (*www.travelocity.com*) continue to hit record highs (the last $4 million in sales in each of two consecutive weeks in February), there are many more shoppers to convert into buyers, Jones says.

But Durham isn't worried. Both he and Jones say the real competition is whatever keeps people from buying via the Web and that the real challenge is providing the customer service and technical capacity to accommodate them when they start buying. They also say Travelocity is a small part of Sabre's business today, but it will grow in importance over time. "We think we've got the ideal person to lead us in that direction," Durham says.

He'd better hope so. Microsoft Corp.'s Expedia (*www.expedia.com*) boasted more than 1 million members and claimed $1 million in weekly revenue more than a year ago. Confident or not, Jones is going toe-to-toe with Microsoft.

— *Anne McCrory*

JOE SMIALOWSKI

TITLE: CIO AND SENIOR VICE PRESIDENT **AGE:** 49
COMPANY: SEARS ROEBUCK AND CO., HOFFMAN ESTATES, ILL.

Call Joe a turnaround CIO. Smialowski was hired in 1996 by Sears' then-new CEO, Arthur Martinez. This year, both men and their respective teams continue efforts to right prior business wrongs — with some help from technology.

For example, a computerized credit-scoring system rolling out now should help stop bad decision making, pilot tests have identified 20% more credit card fraud than Sears would have detected otherwise.

Also in progress, a giant intranet to let store managers check up on themselves. Users get continuously updated performance scores — employee training, customer satisfaction and sales — that are linked to a library of best practices.

To attract more employees, Sears has opened IT centers in Austin, Texas, and Boise, Idaho, along with a telecommuting office at the famous Sears Tower skyscraper in downtown Chicago.

"I will measure my performance during 1998 on our progress to continue making Sears IS a compelling place to work," Smialowski says. — *Kim S. Nash*

JEFF GELTZ

TITLE: DIRECTOR OF INFORMATION SERVICES AGE: 38 COMPANY: ALLENERGY MARKETING CO., WALTHAM, MASS.

ENERGY REVOLUTIONARY "What [Geltz] is working on will be seen down the road as just being seminally important," says Eric Cody, vice president of business development at New England Power Service Co. (NEPS). "It's absolutely first-class, breakthrough kind of work."

Geltz is helping create a new industry: energy marketing. Geltz and his team are developing IT systems to sell natural gas and electricity to customers in the emerging deregulated energy market in the Northeast. Energy deregulation lets customers buy their power from whomever they choose, rather than just the local utility.

JOHN SOARES

AllEnergy (and NEPS) are subsidiaries of the New England Electric System holding company, which is selling all its power-generation facilities to concentrate on energy transmission, distribution and marketing.

In a previous job, Geltz was instrumental in developing a system that now handles some $50 billion in electricity sales to utilities, power brokers or others who buy wholesale electricity via the Internet and resell it commercially. Three years ago, the system established Geltz as a cutting-edge young turk in the IT field.

Now he's doing it again, working on the retail level to market electricity directly to residential and commercial customers.

"It's all very exciting," Geltz says. "It's a brand-new marketplace." — *David Ramel*

EDWARD HOROWITZ

TITLE: CORPORATE EXECUTIVE VICE PRESIDENT, ADVANCED DEVELOPMENT AGE: 50 COMPANY: CITICORP IN NEW YORK

GOAL: 1 BILLION CUSTOMERS. In many respects, Edward Horowitz's son Michael is a typical 14-year-old. He can surf the 'net, fax homework to classmates and watch television — all at the same time. But other kids' dads aren't targeting a billion cyberadolescents to become next-generation banking customers.

That's just what Edward Horowitz, is trying to do at Citicorp. The nation's second-largest bank is on an incredible quest to grab a billion global customers by 2010, principally through electronic connections. Earlier this month, Citicorp announced a $70 billion merger with The Travelers Group. The combined company, to be called Citigroup, Inc., will have 100 million customers in 100 countries.

"Our current customer base is the MTV generation of 1987," he says. "If you look out to 2010, that customer base is the MTV generation of 1998."

Although Citigroup will be shy 900 million customers of its goal, that doesn't faze the high-minded Horowitz.

"The highest growth to what we're calling the big, hairy audacious goal is going to be outside the U.S." in major population centers such as Asia and Latin America, says Horowitz, who was recruited by Citicorp Chairman John Reed from Viacom, Inc. in January 1997.

To nab those would-be customers, Horowitz and Citicorp have a multipronged strategy: establish electronic relationships with people through card-based products that include credit cards, smart cards and payroll cards. To support that effort, Citicorp is creating a network of electronic touch-points, whether it's a kiosk, a personal digital assistant or a cable set-top box.

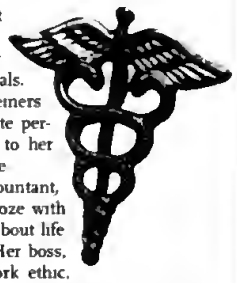
George Kivel, managing director of financial services at Mainspring Communications, Inc. in Cambridge, Mass., called Citicorp's ambitious strategy "a stretch." But he conceded that the bank "is one of the few that has the global network to make that happen."

— *Thomas Hoffman*

MARY JANE REINERS

TITLE: DIRECTOR OF APPLICATIONS AGE: 33 COMPANY: SSM HEALTH CARE SYSTEM, ST. LOUIS

"MJ" Reiners isn't a hot-shot CIO. She's a CPA who recently became an IS director at a chain of Catholic hospitals. But when we heard how Reiners squeezed in the time to write personal notes and give books to her staff, we wanted to learn more.



When Reiners was an accountant, she left her office to schmooze with doctors and nurses to learn about life on the medical front lines. Her boss, Don Lovasz, praised her work ethic, leadership and ability to break down human barriers without being intimidating. The IS staffers we spoke to appreciate Reiners' respect for them, her direct manner, her concern about overwork and stress and how she makes sure they have the tools and training they need. Reiners says she hates micromanagement, likes her staff to say she's wrong and reads books on self-improvement and future trends.

And about those notes? "I did that last Christmas. I knew the next two years would be difficult. I gave out the books (Naomi Karten's *Managing Expectations*) as a gift from SSM. The messages [inside] were personal. I tried to think about each person and what they've done through the year, what project had they given it their all, or when they went beyond the norm for a customer, or a compliment I heard. They're deeply committed people, and I wanted to let them know I appreciate them."

So here's to Reiners and all IS managers who try hard to do the right thing by their people. You deserve some appreciation, too. — *Allan E. Alter*

EXECUTIVE PORTFOLIO

A THANG YOU FOOR THE EDITOOS: Although the 25 IT People to Watch were chosen by *Computerworld* editors, most were nominated by recruiters, academics and IS association officials. We want to acknowledge and thank the following people for their help: Andersen Consulting, Chicago: Lynda Applegate, Harvard Business School, Boston; Virgil R. Carter, Project Management Institute, Drexel Hill, Pa.; Bert Bolton, Giga Information Group, Upton, Mass.; Richard Dunlop, Dunlop & Associates, Ravenwoods, Ill.; Deloitte & Touche Consulting Group, New York; John Henderson, Boston University; Charles Lybrook and Bill Huffstetler, The Information Management Forum, Atlanta; Jim Kinney, Society for Information Management, Chicago; Gartner Group, Inc., Stamford, Conn.; Naomi Karten, Karten Associates, Randolph, Mass.; Scott Matlack, Communications Managers Association, Morristown, N.J.; Thornton May, Cambridge Technology Partners, Cambridge, Mass.; George Newenger, The Conference Board, New York; Alan Paller, The CIO Institute, Bermuda, Ind.; Josh Benhart, MIT, Cambridge, Mass.; Paul Strassmann, New Canaan, Conn.; Ed Yourdon, Cutter Consortium, Arlington, Mass.; Robert Zawacki, Zawacki & Associates, Colorado Springs.

Continued on page 80

Replace motherbo
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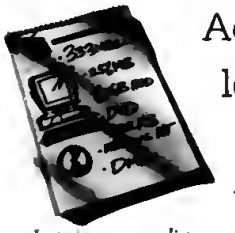
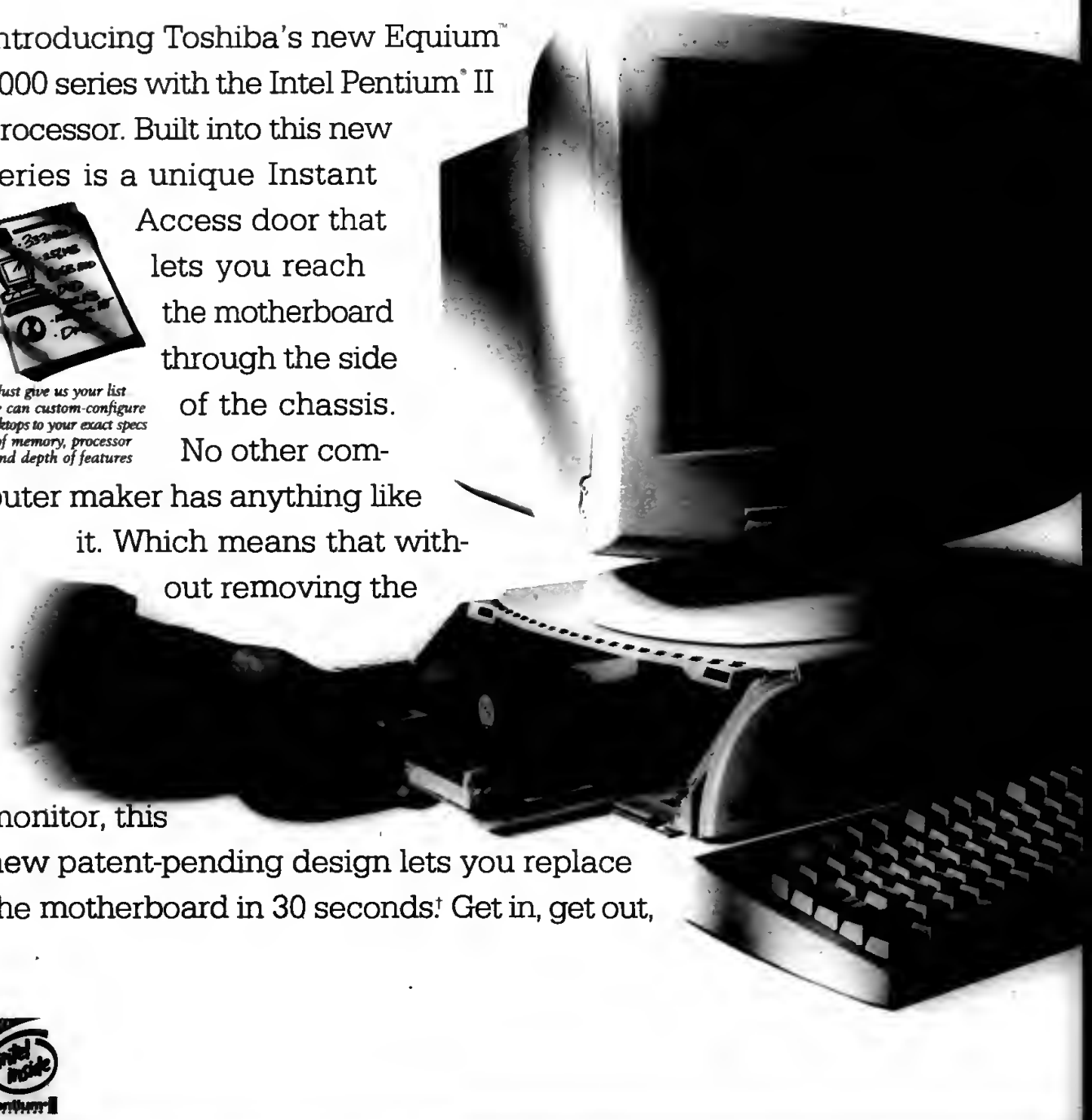
Introducing Toshiba's new Equium™ 7000 series with the Intel Pentium® II processor. Built into this new series is a unique Instant Access door that lets you reach the motherboard through the side of the chassis. No other computer maker has anything like it. Which means that without removing the monitor, this new patent-pending design lets you replace the motherboard in 30 seconds! Get in, get out,



Just give us your list
We can custom-configure desktops to your exact specs of memory, processor and depth of features



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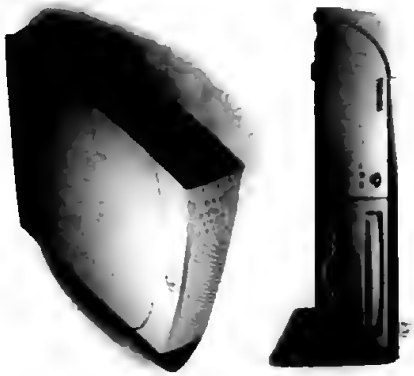

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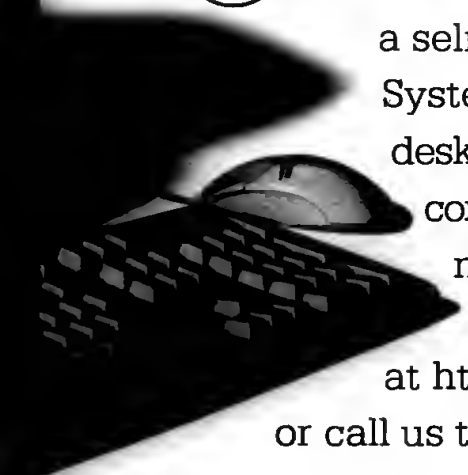

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RANDY MOTT

TITLE: CHIEF INFORMATION OFFICER AGE: 41 COMPANY: WAL-MART STORES, INC., BENTONVILLE, ARK.

WAL-MART + INTERNET = ? Mott can take credit for many IT successes at one of the world's largest retailers.

But can he keep the streak going in the Internet Age?

Mott was hired at Wal-Mart in 1978 as a mainframe programmer and made it to the big show — CIO — in 1994.

A scan of Wal-Mart's numbers reveals just how big an operation he must support: $105 billion in sales, 2,359 stores, 41 distribution centers, 50 call centers and 800,000 employees — 1,300 of whom are in IT.

Every week, 90 million customers generate 65 million point-of-sale transactions.

The Internet is Wal-Mart's new frontier. About 100,000 products — from discount perfume to PCs to flowers — are available for purchase at the company's nearly 2-year-old World Wide Web site (*www.wal-mart.com*).

Online shoppers also can apply for a Wal-Mart Mastercard, sponsored by The Chase Manhattan Bank Corp.

Shoppers can even buy Internet access from Sam's Warehouse stores, a division of Wal-Mart. — *Kim S. Nash*

JEFFREY P. BEZOS

TITLE: FOUNDER AND CEO AGE: 34 COMPANY: AMAZON.COM, INC., SEATTLE

KING OF THE BOOKSHELF Electronic bookseller Amazon.com has always been considered the poster child for retail success on the World Wide Web. You want a book? You browse, you point, you click, you pay, you read.

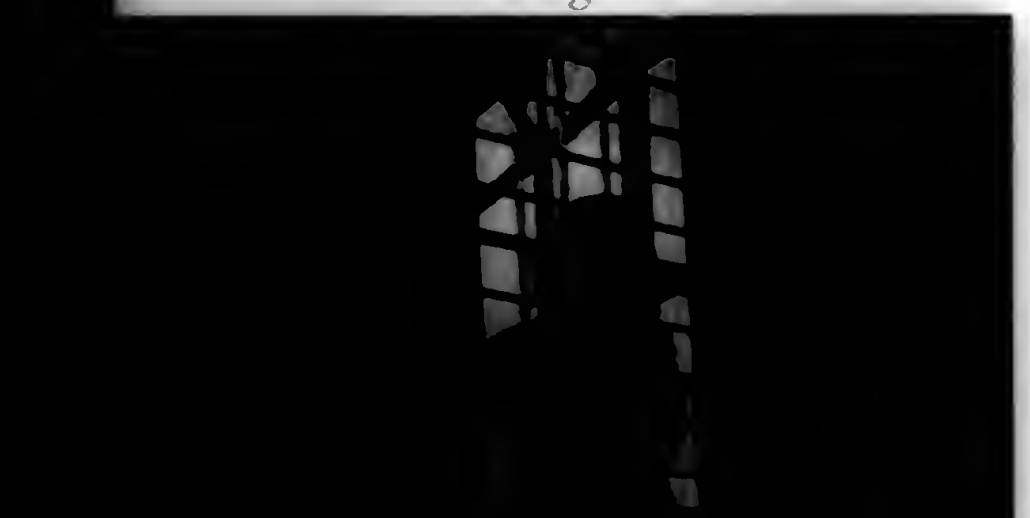
Now bigger publishing groups such as Barnes and Noble, Inc. and Borders, Inc. — and even niche players such as Computer Literacy — are gunning for Amazon.com and its top dog, Bezos, faster than you can say Dewey Decimal System.

In a March 9 article in *The New York Times*, Bezos claims not to be too concerned: "Our advantage is that we know more about E-commerce than anybody else," he says. "We've been doing it longer, and we've already leveled the playing field."

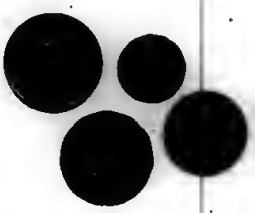
Chris Stevens, an analyst at Aberdeen Group, Inc., says that in a more crowded market, the challenge for Bezos will be to continue to differentiate Amazon.com through excellent service. To accomplish that, Stevens says, Amazon.com must strike a balance between front-end marketing and customer service functions, and back-end inventory and warehousing functions. — *Roberta Fusaro*

MARY LOU HUKEZALIE

rising star in HR



TITLE: VICE PRESIDENT OF LEARNING AGE: 42 COMPANY: BANK OF MONTREAL, TORONTO



Gutsy is the best way to describe Hukezalie, a former farm girl, the mother of two and the unconventional IT human resources vice president at Bank of Montreal. In 1996 and 1997, she had even the most senior technology staffers reapply for key new IT leadership roles when IS moved from a cost center to a $1 billion-per-year for-profit business.

Recently promoted to her current job, a corporate position, Hukezalie's challenge now is to create enterprisewide education initiatives while Bank of Montreal prepares to merge with Royal Bank of Canada. As a human resources executive, she has applied the same strategic thinking to IT personnel initiatives that an IT executive applies to systems initiatives.

"Her strength is thinking strategically and understanding change," says Robert Zawacki, a leading expert in IT human resources. "She fully understands the need for innovation and flexibility and the importance of Bank of Montreal becoming a learning organization."

Just don't call it training, which is "skills-based with a start and a finish," Hukezalie says. Learning, by contrast, is an "ongoing, ever-changing process," much like the banking business itself.

Among other things, she says, all bank employees will spend 5-1/2 days per year involved in integrated learning programs that above all else, "will focus on increasing productivity."

"We've spent a lot of time upgrading our workforce," Hukezalie says. Now "we must treat employees as our most valued investments."

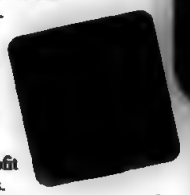
— *Julia King*

RICK CHRUSTIE

TIM SULLIVAN

TITLE: CIO AND SENIOR VICE PRESIDENT AGE: 47 COMPANY: KAISER PERMANENTE, OAKLAND, CALIF.

BETTER HEALTH STARTS WITH IT Sullivan is overseeing a massive effort to link Kaiser's distributed hospitals, clinics and offices in a nationwide information network.



But ask him what his mission is, and he'll tell you it is to improve the quality of care the nonprofit health care giant provides.

Kaiser is the nation's oldest and largest health maintenance organization with an enrollment of about 9 million. Kaiser has begun to affiliate with other provider organizations and wants to boost enrollment by 16%. It's counting on the national IT architecture to support the expansion. And Sullivan's penchant for focusing on the company's mission, coupled with his personable nature and ability to motivate others, may be just what the doctor ordered. One of Kaiser's projects — a clinical information system — involves creating an electronic health record of each patient. It may also mean that down the road, doctors at any Kaiser facility could access patients' complete health histories by "swiping" electronic identification cards the way one uses a debit card at a supermarket. — *Barb Cole-Gomolski*

JUNE DREWRY

TITLE: SENIOR VICE PRESIDENT, CHIEF KNOWLEDGE AND TECHNOLOGY OFFICER AGE: 48 COMPANY: LINCOLN NATIONAL CORP., FORT WAYNE, IND.

CTO, CKO, SIM Being out in front requires leadership and brings visibility and risk. It's at that juncture that June Drewry seems to be spending a lot of time these days. Consider that next year, this 25-year IS veteran will take the reins of the 2,700-member Society for Information Management (SIM) as it approaches the millennium and ponders its future and its flat-to-declining membership.

Consider that, back at the office, she's a corporate executive leading business-unit CIOs in building an IT architecture for knowledge management. And she's not their boss. (So far they've consolidated eight E-mail systems.)

Drewry rose through the insurance IS ranks; at her last job, she was president of a broker operation, Systemized Benefits Administrators, Inc. at Aetna Life Insurance Co. That combination of business and technical skills positions her well for her myriad challenges.

But if things don't work out, Drewry jokes, at least it'll be somebody else at SIM's helm on Jan. 1, 2000.

— *Anne McCrory*

Top 25 IT People to Watch, page 84

CHARLES W. LACEFIELD AND RICHARD A. HAZLETON

struggling company's IT sucessess

TITLES: LACEFIELD (LEFT) IS VICE PRESIDENT, BUSINESS PROCESSES AND IT; HAZLETON IS CHAIRMAN AND CEO AGES: LACEFIELD, 57; HAZLETON, 55 COMPANY: DOW CORNING CORP., MIDLAND, MICH.

There are two Dow Cornings: the embattled Dow that filed for Chapter 11 under the pressure of thousands of lawsuits that targeted breast implants manufactured by the company, and the forward-looking Dow and its remarkable record of information systems success. That's what makes Hazleton and Lacefield worth watching.

A 1997 MIT case study cited the importance Hazleton and other senior managers placed on information technology. They made major changes in IS management. One change was the appointment of Lacefield, a former Dow chemist who rose through non-IT roles to vice president of manufacturing and engineering.

Under Lacefield, the IS organization has achieved two remarkable successes. It has overseen a successful SAP implementation, viewed as the centerpiece to re-engineering Dow's global supply chain. The effort has gone so well, SAP North America named Dow the first North American-based company to receive a "customer competence" commendation for excellence in SAP implementation.

And in the midst of the IS labor crisis, Lacefield presides over a stable IS shop. Although Dow Corning is based in an out-of-the-way small town in central Michigan, its annual IS turnover rate is just 1% to 2%. — *Rick Saia*

DAWN LEPORE

maintaining e-commerce edge

TITLE: CIO, EXECUTIVE VICE PRESIDENT AGE: 43 COMPANY: CHARLES SCHWAB & CO., SAN FRANCISCO

When Schwab rolls out a service on its World Wide Web site, the brokerage has to handle millions of hits from day one, and the site can't go down.

"That's really hard to do," Lepore says.

Some would wilt under such pressure. But Lepore, a 15-year Schwab veteran, seems enthusiastic. In the coming year, Schwab will continue to beef up its Internet-based offerings to focus on retail customers and businesses looking to manage 401(k) plans over the Web. "We need to be able to handle even the heaviest trading days," she says.

Market forces also are pushing on Schwab, once a scrappy discount brokerage that has become the leader in the electronic trading space. "Competition is intensifying," Lepore says. "And we're seeing decreasing prices." She says Schwab will keep its edge by delivering a set of services that goes beyond the basics of buying and selling stocks.

People who work closely with Lepore say she personifies the Schwab culture, which has a start-up feel to it. "She's extremely resilient," said Jan Hier-King, a senior vice president who has worked with Lepore for several years. "No matter what you throw at her, she keeps plugging away."

— *Barb Cole-Gomolski*

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CECIL O. SMITH JR.

the deregulation challenge

TITLE: SENIOR VICE PRESIDENT OF INFORMATION MANAGEMENT AND CIO AGE: 50 COMPANY: DUKE ENERGY CORP., CHARLOTTE, N.C.

Since he joined Duke Energy in 1995, Smith has employed tactical calm and more-for-less management sense to remake the IT department of a highly regulated energy services corporation into an organization that is geared up for a competitive, deregulated environment. "This whole area is a new industry," Smith says. You bet.

Leonard Wass, CEO of Wass Consulting Group, Inc., in Napierville, Ill., says IT leaders in the deregulated utilities environment will need to be creative. They must factor in everything from the sophisticated metrics and applications used to control power distribution to the use of data warehouses to crunch data about customer preferences.

As if deregulation weren't enough, Smith is helping to redefine the whole systems infrastructure for what is basically an 8-month-old company with $20 billion in assets (Duke Energy Corp. was created in June 1997 after the merger of Duke Power Co. and PanEnergy Corp.) His plate includes heaping helpings of year 2000 preparation and infrastructure improvements. Because Duke is responding to the open market by buying assets and building new plants — in Connecticut for example — the need to link and support far-flung operations looms large, he says.

Smith says he'll know 1998 was worth popping the cork for if he can pull off these objectives. "Do I believe we'll do it? Yes, we will." — *Roberta Fusaro*

CHARLES O. ROSSOTTI

TITLE: COMMISSIONER AGE: 57 ORGANIZATION: INTERNAL REVENUE SERVICE, WASHINGTON

TAXING IT CHALLENGE. You think you've got IT problems? Rossotti has inherited an agency that:

- Has 102,000 employees.
- Has a $7.8 billion budget.
- Keeps the U.S. working by annually processing some 205 million tax returns to collect $1.5 trillion.
- Uses cumbersome IT systems that still don't work right after a failed $3.3 billion upgrade.
- Must solve a potentially disastrous year 2000 problem a year ahead of everybody else, while implementing extensive tax law changes.
- Just lost its CIO charged with solving the year 2000 problem and upgrading systems.
- Is almost universally hated and feared.
- And is under a Congressional mandate to become responsive, friendly and customer-service oriented from the top down.

There, feel better?

So how's he going to do it? By being organized, to start.

"My challenge has been to put all these [changes] in an orderly sequence," Rossotti says.

His highest priority: the year 2000 problem, which must be fixed by next year's tax season. Then comes another systems upgrade, expected to take 15 years and cost $8 billion.

Rossotti, the first commissioner in decades who is not a tax lawyer or an accountant, was confirmed by a 92-0 Senate vote.

"I don't think they could have made a better pick than Charles," says Linda Cohen, an analyst at Gartner Group, Inc., based in Stamford, Conn. — *David Ramel*

PAT ZILVITIS

TITLE: CIO AND VICE PRESIDENT OF INFORMATION TECHNOLOGY AGE: 55 COMPANY: THE GILLETTE CO., BOSTON

GLOBAL UNDERTAKING Zilvitis can't wait for warm weather to arrive in New England. When it does, he'll spend weekends flogging his mountain bike through the Vermont woods.

"Sometimes we've ended up bushwacking," he recalls with glee. "We run out of trails and have to cut our own."

Zilvitis has cut through a fair amount of IT undergrowth recently at Gillette, which is two years into implementing an SAP AG system throughout its global companies (which include the Duracell, Braun, Gillette, Oral-B and Papermate lines).

The system was designed to let Gillette present a single face to customers while giving the company a single data warehouse view across its businesses.

It also will let Gillette consolidate many back-office and IT activities into regional data centers worldwide. In a project this size, Zilvitis says, the role of the CIO is "part educator and part missionary." "Our challenge is to make sure that [information technology] is aligned with business. Otherwise, IT projects only matter to IT, and they have a very low chance of succeeding," he says. — *Stewart Deck*

IT Careers

ORACLE Wisdom

By Linda Wilson

IT pros who speak with Oracle experience will find that hiring managers everywhere are all ears

ORACLE. ORACLE. ORACLE. Seems like every hiring manager is bowed in respect to this technical demigod.

Hiring demand nationwide is robust for information technology employees with experience in myriad popular Oracle products. The wish lists include Oracle8, a relational database management system; Oracle Applications, a client/server applications suite; Oracle Express, an online analytical processing (OLAP) server and front-end tool; Oracle Discoverer, a query and reporting tool; and Oracle Designer/2000 and Oracle Developer/2000, modeling and code-generating tools.

Computerworld recently asked four leading IT hiring managers (see box at right) for their takes on the best Oracle skills for IT professionals to invest in. What we found: Not surprisingly, they are having trouble recruiting and retaining experienced people. As a result, they have developed creative strategies to attract and keep people, including on-the-job training for current staff and new hires.

That's encouraging news for IT employees. Developing or honing skills as an Oracle developer or database administrator is a good career move. What's more, you should have no trouble finding an employer willing to train you.

CW: What Oracle products are you using?

SCHERER: The database is the primary one. We also use some of their tools, like Developer/2000, Designer/2000 and Discoverer.

BEYMAN: Oracle7.3. We are about to do a new application in Oracle8.

RICHARDS: We are using their financial, manufacturing and distribution systems [modules of Oracle Applications], OLAP tools Express and Sales Analyzer, Discoverer, Developer, Designer and Oracle7.33.

PRINCE: Oracle Applications. We run our entire corporation on Oracle databases.

CW: In what applications are you using Oracle products?

SCHERER: Factory-floor applications. It keeps track of parts as they come in and keeps track of them as they are in manufacturing and finishing stages. We have many, many databases.

BEYMAN: Database servers associated with a variety of Web sites and various internally written transaction processing and decision-support systems. Some examples: the Product Server that supports the back end of the phone and Web-based shopping system, which supports 200 phone representatives and over 100,000 Web and AOL sessions per day, and the decision-support system, which the membership business uses to track marketing campaigns.

RICHARDS: The [enterprise resource planning] solution, which has been in production since May 1995.

CW: What hiring are you doing for Oracle skills?

SCHERER: In the last month, we brought on a contract Oracle support person, and we just recently interviewed a college graduate that we will probably bring in to begin training. I don't envision hiring any others this year.

BEYMAN: We have a number of openings in a number of divisions. We are looking for programmers with experience working with Oracle, [database administrators] and systems administrators with Oracle experience.

CW: What has been your experience trying to find people with skills you need?

SCHERER: We were probably searching for three or four months for the fellow we just brought on.

RICHARDS: The last time we looked for somebody with experience, it took from September 1996 to April 1997. We have had a problem finding people who not only understand the technical side, but who also understand business operations and how the two are married.

BEYMAN: Yes . . . particularly [database administrators].

CW: Do you provide training as a way to get the skills you need?

SCHERER: We prefer to hire recent graduates and train them. We always provide some training because it is very difficult to find someone on the street with all the skills we need at a price we are willing to pay.

RICHARDS: Our strategy is to be over our head count by one individual because of the lead time to find highly competent people. We have an individual in reserve whose skills are being developed. It is our entry-level role.

PRINCE: We recently did an internal course on SQL Plus, and we opened it up to business users. We found people who have a great aptitude, which wasn't coming out in their current role.

CW: Have Oracle professionals been enticed away from your company?

BEYMAN: I think that's inevitable.

CW: Do you offer salary premiums or other perks to attract Oracle professionals?

RICHARDS: We haven't provided a bonus. We have provided incremental vacation time over what people normally get, and we have waived the 30-day wait for medical insurance. What I have done to retain people: a paid vacation if someone has been doing a good job. I say, "Here is an all-expense-paid trip for you and your spouse for a week."

PRINCE: We'd like to, but it just doesn't fit the culture of the corporation. We try to do it with attractive salary offers and jobs that are attractive to people. □

Wilson is a freelance writer in Glen Ellyn, Ill.

The panelists

DAVE SCHERER, manager of client/server database services at Caterpillar, Inc., a farm equipment manufacturer in Peoria, Ill.

JONATHAN BEYMAN, executive vice president and co-CIO at Candant Corp., which owns businesses including Coldwell Banker, Avis, Inc. car rental, and consumer home shopping membership clubs in Stamford, Conn.

DAVID RICHARDS, vice president of information technology at Tempe Ariz.-based Rockford Corp., a manufacturer of high-end stereo equipment for automobiles and professional recording studios.

MICHAEL PRINCE, CIO at Burlington Coat Factory Warehouse, Inc., a clothing retailer in Burlington, N.J.

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Rocky Mountain Hires

By Kevin Burden

HEAD for the Rockies for one primary reason: the Rockies. The lifestyle there is unique — hard-working and cultured in some areas, relaxed and isolated in others, with an outdoors that is always setting the pace.

But don't come for the IT jobs alone. Except for the region's southern metropolises, the information technology job market can be very limited in what it can support. Besides, jobs will always come and go, but those mountains are forever. Here's what to expect in the major-city IT job markets.

The Rocky Mountain region offers unbeatable beauty and charm. But the IT job landscape is marked by peaks and valleys

Salt Lake City

Utah is one of the few states, if not the only one, that is recognized for being something that it probably isn't — a cult state.

The predominantly Mormon population does give Utah cities certain unique flavors. But the fears that most newcomers have about living in this religious society are unfounded, says David Warnock, IT recruiting manager at American Stores Co. in Salt Lake City.

"We're always answering questions like, 'Can you buy a drink or have a smoke?' " Warnock says. "My answer has always been, 'You can do anything in Salt Lake City that you can do in bigger cities, plus a whole lot more.' "

That "more" is almost any outdoor recreational activity you can think of, all within a half-hour's drive of downtown.

"Besides, Anheuser-Busch is a sponsor of our 2002 Olympic games. Of course you can drink in this town," Warnock says.

Warnock says he's educating more prospective employees than ever because homegrown IT talent isn't as abundant as it once was. "It's tough to find good people that don't already have great jobs," he says.

Unemployment is a low 2.8% in Utah. And many companies in the valley will acknowledge that they prefer to hire the Brigham Young University-educated, highly moral talent the state's Mormon culture produces, according to Lora Lea Mock, founder of Professional Recruiters in Salt Lake City. But there just isn't enough of it.

GIVE ME SPACE

All that translates into great opportunities for information systems workers looking to move to Utah's wide-open spaces. The Provo/Salt Lake City/Ogden corridor, where 75% of Utah's residents live, found itself with 10,416 new companies last year. And that increased the demand for IT talent even more.

Programming and network administration continue to be the most sought-after skills in the corridor, according to an employment report from Business Technology Resources in Salt Lake City. Nearly half of the 608 companies in the report are actively recruiting professionals with C and C++ skills. Windows NT administrators and Oracle administrators also are highly prized, and Java recently overtook Borland International, Inc.'s Delphi as the area's fastest-growing language.

One of the largest software development communities in the U.S. — third behind Silicon Valley in California and Research Triangle in North Carolina — Utah continues to add to its already impressive vendor community. Some of the notables include Novell, Inc., Gateway 2000, Inc. and Iomega Corp.

What attracts IT vendors to the Salt Lake City area isn't much different from what draws anyone: moderate taxes, small-town values in a moderately sized city, an affluent and educated workforce and accessibility. Utah is literally the crossroads of the West, a convergence point for major interstate roadways and railways, and Salt Lake City is a hub for Delta Air Lines, Inc.

Boise, Idaho

In fall 1989, Ken Cross, a programmer/analyst at Doubleday Publishing in New York, decided he'd had enough of what he called a mind-bending life. Each day involved draining train rides into Manhattan and then back home to Long Island. And although New York had the sports teams and restaurants he loved, Cross stared out the window on each train ride like a lover who knows the affair is over but just won't let go.

Deciding to relocate was the obvious move, Cross says. But he had a few requirements for his new lifestyle. His new location had to move at a slower pace than the Northeast. It had to have fewer people. The job needed to pay well for the area. And he needed to be close to quality skiing.

I'VE HEARD BOISE'S NICE

His best offer came from West One Bank in Boise. "Boise? It seemed to have all that I was looking for, but I never thought I'd end up in Boise," Cross says.

He took the job. He figured that with his CICS skills, he could move on if he didn't like the West One job and not risk landing in the potato industry.

That was almost nine years ago. During that time, U.S. Bank acquired West One and offered to relocate the 80-plus programmers to its Portland, Ore., office. "Only three went," Cross says. "Most of us didn't want to give up this life yet." That testifies to the hold that Boise has on those who sample it. The city is filled primarily with transplants who have chosen to live there.

Cross had no problem finding another job. Boise has a healthy demand for programmers, especially database administrators. Oracle, Sybase, Informix and SQL administrators are hot now, according to William Boyer, president of Snelling Personnel Services in Boise. Boise also is home to several computer vendors; Hewlett-Packard Co. and Micron Electronics, Inc. are the largest.

Boise has the jobs, but it's Idaho life that most out-of-staters need to be sold on. The Boise metropolitan area is home to only 372,000 people. That's enough people to give the city some culture, but few enough so everyone can spread out. The median house price is $110,200, and the cost of living is just slightly above the national average.

IT salaries are tuned to Boise's low prices. "But even if I doubled my salary in New York, I could never afford the house I'm living in now," Cross says.

Casper and Cheyenne, Wyo.

One of Wyoming's more popular bumper stickers reads, "Wyoming native — endangered species." Apparently, it's getting harder to find people who stay in Wyoming all their lives, a poor testimonial to the opportunities the state offers.

Lack of job opportunities really is Wyoming's biggest problem, according to Ron Williams, IS manager at Wyoming Machinery Co. in Casper. "The job market throughout all of Wyoming is very slow-moving, especially in the IS field," he says. IS jobs don't open

IT SALARIES IN THE ROCKY MOUNTAIN STATES

JOB TITLE	COLORADO SALARIES	REMAINING ROCKY MOUNTAIN REGION	NATIONAL AVERAGE
Chief information officer	$110,000	$99,000	$123,000
Director of IS/MIS	$83,000	$80,000	$80,000
Project manager	$60,000	$65,000	$67,000
Senior programmer/analyst	$55,000	$48,000	$53,000
LAN manager	$51,000	$48,000	$53,000
Senior systems analyst	$50,000	$52,000	$56,000
Programmer/analyst	$44,000	$41,000	$43,000
Network administrator	$42,000	$40,000	$47,000
PC technical support specialist	$36,000	$30,000	$34,000
Computer operator	$26,000	$26,000	$27,000

Source: Computerworld's 1997 Annual Salary Survey (all salaries have been rounded off to the nearest thousand)

up here very often, "and the people that land them tend to stay in them a long time," he says.

Wyoming doesn't have the population or industries to support a large professional workforce. Although the state's square mileage makes it the ninth largest state, its population is barely 500,000.

Wyoming Machinery is one of Casper's largest companies, and Casper is one of Wyoming's largest communities. (The other is the state capital, Cheyenne.) The company employs 300 people, but only five of them work in IS. All five have more than 10 years of service, and all are transplants.

"People who are enamored with the thought of Wyoming are the ones who will make the best life here," says Summer Cooper, MIS manager at Wyoming Medical Center in Casper.

LIFESTYLE CHOICE

Cooper says only a few of her 20 IS employees are Wyoming natives. People come to Wyoming for many reasons, such as the slower pace of life or the outdoors. But most likely, it probably wasn't the job, she says.

Jobs in Casper and Cheyenne don't pay as high as they do in other Rocky Mountain-area cities such as Denver and Salt Lake City. That makes it very difficult to recruit talent, Cooper says. "It's difficult to compete with most other cities. We find the major employers around the state typically go back and forth, stealing each other's IT employees," she says. "They're our best chance because they have already chosen to live here."

There are a few things you notice when you come to Wyoming. Most businesses are involved in tourism, cattle, health care or energy and mining. The state doesn't come close to the commercialization of Utah and Colorado. And if you drive 15 minutes in any direction from downtown Cheyenne or Casper, you'll be in isolation.

Denver and Colorado Springs

When most people think of the Rocky Mountains, they probably think of Colorado. But as far as states in the Rocky Mountain region go, Colorado is by far the most commercialized. As a result, there's no end to the area's IT and professional opportunities, as well as its recreational activities.

The two main metropolitan areas, Denver and Colorado Springs, are only 68 miles apart. That puts Denver's big-city culture only an hour's drive away for those living in the slightly more rural Colorado Springs, home of the Air Force Academy.

The entire state is going through an economic upswing. It stands as the fourth fastest-growing state in the U.S., and there isn't an IS skill that isn't in high demand. But if you're looking for the slow-paced life of some of Colorado's neighboring Rocky Mountain states, you won't find it here. The culture is relaxed, "but people work very hard here," says Dick Tucker, operations manager at Digital Equipment Corp. in Colorado Springs. "We just spend 75% of our time outdoors."

Colorado Springs is a sprawling metropolis. And it has gone through some rapid growth since Tucker first arrived from New Hampshire in the early 1980s. In that time, 200,000 more people moved to the Colorado Springs area and brought the total population to 500,000. And where there was once a sizable gap in the cost of living between Colorado Springs and Denver, today that gap is very narrow. Only an 8% difference separates the cities' median property values, and the two are nearly tied with each other in the ACCRA cost of living index.

THERE'S THAT HILL AGAIN

That said, Colorado Springs may never catch up to Denver's population level, which is now 2.1 million. Part of Colorado Springs' character comes from Pike's Peak, just 33 miles away. The impressive mountain, which hosts the Annual Pike's Peak Road Race, is "in your face no matter where you look," Tucker says.

Also evident is a heavy military presence. Several defense installations and the Air Force Academy account for more than 25,000 military personnel and nearly 40,000 civilian jobs.

And ever since MCI Communications Corp. moved to Colorado Springs, high-tech companies have flocked to this region, earning it the nickname "Silicon Mountain." That distinction may be more the state's dream than reality, but companies such as HP, Allied-Signal Technical Resources, Inc. and Oracle continue to move in.

The semiconductor industry is the latest to take off. Rockwell Semiconductor Systems, Atmel Corp., UTMC Microelectronics Systems, Symbios Logic and Phillips Electronics have all converged on the Colorado Springs area to compete for one another's employees.

Montana

When it comes to describing Montana's landscape, laudatory prose rolls off the tongue. But "scarce" is the only word needed to describe the state's IS job opportunities.

"There isn't much of an IS job market here. There aren't even many employers here," says Jean Cannada, manager of IS systems administration at Montana Power Co. in Butte. With fewer than 900,000 people in the entire state, there's only so much industry Montana can support. The businesses it does support are mostly concentrated in the mining, petroleum products and health care industries.

Still, World Wide Web development, client/server skills and network expertise are the IS skills Cannada says companies look for most often. But despite being one of the area's largest IT employers, Montana Power isn't actively seeking any of that talent.

Most of Montana's residents are concentrated in several scattered cities. The largest cities are Billings, Great Falls and Butte, but a large city in Montana means a population of about 50,000. "You can drive from one end to the other in any of these cities in 10 minutes," Cannada says.

NO MADDING CROWD

The scarcity of people is one of Montana's biggest draws as well as one of its greatest culture shocks. When Cannada moved to Butte 19 years ago from Knoxville, Tenn., the adjustment at times was more than she could handle.

"Driving 100 miles on the interstate and seeing only two cars, and 50-below temperatures in the winter — it took a while before I could appreciate Butte," she says. "But the casual way of living, the outdoors and the less congestion would be tough to give up now."

However, the casual culture of Montana businesses is changing, according to Jay Stever, IS manager at Supervalu, Inc., a food distribution company in Billings. Although companies in the rest of the country are loosening up their environments, many Montana companies are stiffening theirs, Stever says. "We feel like we need to speed our pace up if we have any hope of competing." □

Burden is Computerworld's senior features writer.

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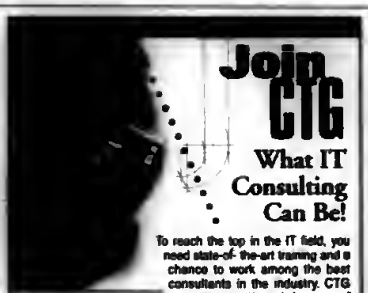

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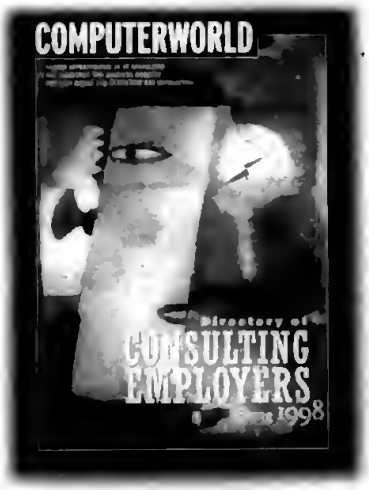

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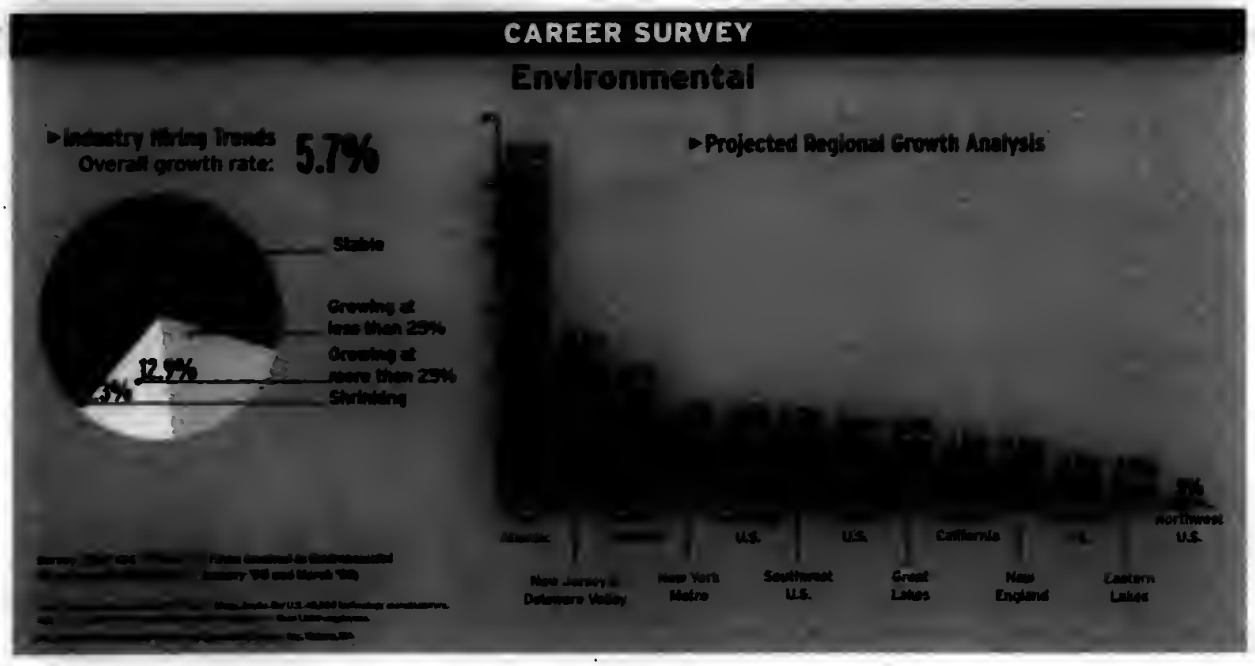

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Autodesk: FTC-proof?

The revelation last week that the Federal Trade Commission (FTC) is once again looking into the business practices of Autodesk, Inc. (NasdaqAUDSK) hasn't seized the tackles of investors — yet.

The computer-aided design (CAD) software leader's shares continued their strong performance after an initial drop in the stock price, when officials at San Rafael, Calif.-based Autodesk announced the FTC investigation. And most analysts continue to rate the stock a Buy, according to the Nasdaq Stock Market World Wide Web site.

"Until we on Wall Street have a clearer picture of the investigation, it will be viewed as a pending event and will have no impact on the stock," says Peter Rogers, an analyst at Volpe Brown Whelan in San Francisco.

That's because the FTC hasn't revealed the main focus of its investigation. And there is speculation that the probe could be related to the settlement of an FTC investigation into Autodesk that was completed last March.

Autodesk makes AutoCAD, the leading design software package on the market.

At this time last year, the FTC was winding up its investigation into Autodesk's purchase of SoftDesk, another CAD software developer. The government forced SoftDesk to sell IntelliCad, a new CAD engine similar to AutoCAD, before the deal was allowed to continue.

"There have been a growing number of reports that Autodesk has sold its value-added resellers that if [they] adopt Visio Corp.'s [NasdaqVSIO] IntelliCad, they will lose their license to sell AutoCAD," Rogers says.

And competitors say Autodesk should open up its proprietary .DWG file format so users who aren't running AutoCAD can still access the millions of files originally created with AutoCAD. A group of companies has even formed an Open-DWG consortium.

Even so, Autodesk has seen sales boom since last April (see chart), and its share price has steadily risen from the low $30s to hover at around $50.

— Tim Ouellette

AUTOMATIC FOR AUTODESK

Autodesk has had strong results for the past four quarters

Quarter ended	4/30/97	7/31/97	10/31/97	1/31/98
Revenue	$122M	$154M	$162M	$182M
Profit	$4.5M	$17.8M	$21M	$29.3M
Profit margin	3.7%	11.6%	12.9%	16.1%

Exch	52-Week Range			Apr 24 '98 Prc	Wk Net Change	Wk Pct Change
COMS	59.00	26.50	3 COM Corp	33.94	0.94	2.8
ART	50.25	27.94	ARIBITECH Corp	43.88	-2.88	-6.1
ASND	60.00	22.00	Ascend Communications	41.00	-0.31	-0.7
S	88.50	30.75	AT & T	61.63	5.31	7.9
BNYW	13.38	7.19	Boston Systems Inc (H)	8.56	1.25	12.7
BAY	61.88	13.63	Bay Networks Inc	23.13	-0.11	-0.3
BBI	100.00	38.63	BBN Atlantic Corp	38.00	-2.19	-2.3
BLS	38.69	40.38	Bellsouth Corp	68.19	-0.56	-0.9
BRKT	22.75	9.25	Brooktrout Technology (H)	20.00	7.69	7.0
CS	48.50	12.63	Castletron Systems	13.75	0.44	1.3
CGRM	21.88	8.56	Contingent Communications	12.00	-0.56	-4.2
CSCO	74.38	50.63	Cisco Systems Inc (H)	72.25	2.13	1.8
CMNT	6.13	3.31	Computer Network Tech	4.13	0.25	3.7
CNCX	50.38	7.88	Concentric Network Corp	22.75	-2.50	-9.9
DIGI	32.75	16.50	DSC Communications	31.94	0.50	3.2
FORE	21.81	10.88	FORE Systems Inc	19.63	2.13	12.1
GEIC	9.50	5.25	General Datacomm Indl	6.88	0.38	2.1
GSX	33.00	36.63	General Signal Networks	44.06	6.56	1.3
GTE	64.38	40.50	GTE Corp	50.38	1.56	2.8
LU	70.00	27.50	Lucent Tech (H)	73.31	3.69	5.3
MADCF	9.19	2.25	Madge Networks NV	7.00	0.63	0.8
MCIC	53.00	27.31	MCI Communications Corp	37.50	0.00	0.1
NETM	3.25	2.09	NetManage Inc.	3.91	0.25	6.8
NTAS	3.00	0.63	Netso Corp	2.50	0.13	5.3
NCDI	14.50	5.88	Network Computing Devices	9.56	-0.88	0.6
NWK	22.50	11.63	Network Equipment Tech	18.69	-0.56	2.9
NN	38.50	18.94	Newbridge Networks Corp	27.31	-0.25	-0.9
NT	63.00	34.88	Nortelnet Telecom Ltd. (H)	61.81	2.69	4.3
NOVL	11.13	6.38	Novell Inc	9.78	-0.53	5.2
ODSI	18.50	3.19	Optical Data Systems Inc	7.75	1.94	33.3
PCTL	14.13	3.63	Picturetel Corp	9.67	2.16	28.9
PTON	3.50	0.97	Proteon Inc	1.13	-0.03	-2.7
RACO	9.13	1.88	Racotek Inc	3.88	-0.25	6.9
RADS	29.38	8.50	Radnet Systems Inc	22.75	1.31	5.5
VRTL	7.63	3.50	Virtel	3.31	0.19	3.7
SBC	46.56	25.88	SBC Communications	41.38	0.50	1.2
SFA	26.13	14.00	Scientific Atlanta Inc (H)	23.19	3.38	17.0
SHVA	16.44	8.00	Shiva Corp	10.13	0.56	5.1
FON	75.63	42.25	Sprint Corp	69.25	0.94	1.3
QWST	41.06	13.19	QWest Communications	37.00	-0.34	-0.9
SMSC	10.13	5.00	Standard Microsystems Corp	11.25	0.38	4.7
USW	58.00	31.13	U S West Inc	52.19	1.56	3.9
XIRC	17.13	7.38	Xircom (H)	13.13	2.38	46.1
XYLN	31.31	15.50	Xylan Corp	28.50	1.13	1.8
AAPL	29.63	12.75	Apple Computer Inc	27.88	0.13	0.3
CPQ	39.75	15.00	Compaq Computer Corp	29.00	3.31	12.9
DELL	75.63	39.13	Dell Computer Corp (H)	75.25	7.81	11.6
GTW	57.75	19.50	Gateway 2000 Inc (H)	37.75	9.38	19.8
HWP	72.94	48.88	Hewlett Packard Co	71.75	8.13	12.8
MUEI	25.50	0.44	Micron International Inc.	15.25	0.88	6.1
NIPNY	74.88	48.63	NEC America	58.50	2.44	4.5
SGI	48.13	30.94	Silicon Graphics	33.44	0.19	1.4
SUNW	53.33	38.75	Sun Microsystem Inc	49.94	7.56	3.8
DGN	37.94	13.38	Data General Corp	35.50	1.88	6.1
DEC	63.63	38.13	Digital Equipment Corp	58.00	3.50	6.6
IBM	158.00	69.88	IBM (H)	117.13	9.94	9.3
MDCD	6.63	2.88	Meridian Data Inc (H)	5.75	1.38	37.4
NCR	38.50	25.63	NCR Corp	37.13	4.31	73.1
PRCM	50.63	6.75	ProCom Technology Inc	8.38	0.00	-0.7
SQNT	35.25	18.88	Sequent Computer Sys	19.38	1.38	7.6
TEXM	0.00	2.48	Texas Micro Inc	3.88	0.19	5.1
SMX	80.75	59.00	Stratus Computer Inc.	65.31	0.44	1.0
UPS	23.19	5.88	Unisys Corp (H)	22.00	0.75	3.5
ADBE	53.13	33.50	Adobe Systems Inc	50.25	2.50	5.1
AMSWA	15.63	3.50	American Software Inc	8.38	0.25	3.1
APLX	72.50	3.13	Aplix Inc	5.00	-0.31	-5.2
ARSW	53.29	10.50	Arsoft Software	44.50	1.88	7.7
ARDI	15.88	6.00	Ardent Software	13.71	2.25	54.6
ARSC	36.38	17.75	Ares Corp (H)	34.15	0.13	0.4
AUSK	51.13	30.38	Autodesk Inc.	44.00	1.38	3.2
BMCS	98.63	29.63	BMC Software Inc (H)	91.44	1.88	4.1
BOOL	25.69	13.13	Bridge and Bandage	21.44	0.50	2.3
BORL	12.19	3.00	Borland Int. Inc	9.56	0.50	5.0
BOBJY	17.38	8.63	Business Objects	17.38	3.50	25.2
CAYN	4.25	0.94	Cayenne Software Inc.	2.00	0.28	12.3
CNTR	8.53	0.88	Centura Software	2.88	0.31	10.3
CHKPF	50.00	50.63	Checkpoint Software	32.31	4.09	27.1
CODCNF	35.00	17.63	Cognos Inc	28.00	0.44	1.6
CA	61.00	28.19	Computer Associates (H)	38.44	3.44	6.1
CPWR	31.38	16.75	Compuware Corp (H)	40.50	-1.88	-7.6
CSRE	10.00	4.25	Corsesource Inc	7.50	0.00	0.0
COSFF	0.69	1.88	Corel Corp	2.75	-0.00	-2.2
DBTI	3.50	3.13	Database Technologies Inc	1.50	0.50	12.9
FILE	60.25	30.50	Filenet Corp (H)	53.50	3.88	7.5
FRTE	18.00	4.50	Fourth Software	7.19	-0.56	-7.3
FTPS	3.38	1.56	FTP Software Inc	3.05	0.28	10.2
GPSI	38.75	00.50	Group Plastics Software Inc	35.50	3.75	9.6
HUMCF	54.25	94.00	Humancentered Comm Ltd	94.00	5.00	12.8
HYSW	48.63	13.00	Hyperion Software Corp (H)	42.75	-8.75	1.7
IIRC	00.00	11.75	Information Resources	18.56	1.38	7.4
IFMX	12.44	4.00	Informix Corp	9.44	1.31	16.2
INGR	54.19	6.25	Intergraph Corp	8.25	-0.50	5.7
LEAF	4.00	0.81	Interleaf Inc	3.00	-0.13	-4.2
ISLI	21.25	6.25	Interlink Inc	14.75	1.50	9.2
INTU	56.94	21.50	Intuit Inc. (H)	50.63	1.91	3.6
JDEC	42.50	34.88	J.D. Edwards Co.	31.69	4.88	12.0
TLC	27.19	5.63	Learning Co. (The)	25.00	0.94	3.8
LGXX	10.00	4.50	Logic Works	14.63	-0.50	3.3
MAPS	14.25	0.88	Mapinfo Corp	12.19	-0.63	-4.9
MRTH	4.63	2.19	Marathon	3.97	0.28	7.6
MLNT	13.13	8.88	Mentor Graphics	9.56	-0.31	5.2
MFGY	60.63	20.63	Micro Focus	46.25	1.75	3.6
MCRI	14.00	4.50	Microlonics Inc	13.00	0.44	3.5
MSFT	88.13	55.19	Microsoft Corp (H)	82.75	1.13	1.2
OBJS	3.25	0.44	ObjectShare Inc	2.44	1.25	26.7
OBJTL	15.00	8.38	Ontech Ltd	12.00	0.00	5.6
ORCL	40.13	17.25	Oracle Corp	28.31	0.44	1.6
PMTC	33.25	19.00	Parametric Technology	31.75	2.22	6.5
PSFT	57.44	18.81	Peoplesoft (H)	47.00	7.75	14.2
PTEC	10.50	11.00	Phoenix Technologies	11.63	-0.47	3.9
PSQL	25.00	6.88	Platinum Software	23.00	-0.50	1.6
PLAT	31.13	10.56	Platinum Technology	25.38	-3.25	4.7
PRGS	54.63	15.63	Progress Software Corp	41.00	-2.19	0.6
RNBO	50.00	38.19	Rainbow Technologies Inc	24.88	5.88	7.0
REDB	19.63	5.00	Red Brick Systems Inc.	7.25	2.13	41.5
ROSS	5.50	1.75	Ross Systems, Inc (H)	4.94	1.00	27.4
SAPE	57.88	16.63	Sapient Corp	46.75	0.75	12.6
SEOC	7.38	2.13	SEO Inc	5.00	0.88	22.7
SOTI	44.38	20.50	Security Dynamics Tech (L)	31.75	3.19	12.8
SSW	38.88	14.75	Sterling Software Inc	25.50	-0.88	-3.3
SDRC	50.38	15.25	Struct. Dynamics Research	27.31	2.94	12.1
SYBS	21.63	0.69	Sybase Inc	8.29	-0.84	-9.2
SYMC	51.88	12.00	Symantec Corp (H)	29.81	1.31	4.6
SNPS	42.19	26.75	SynOpsys	38.88	2.38	5.7
SSAX	17.63	8.00	System Software Assoc	7.31	-0.38	-4.9
SYSF	14.50	1.00	Systemsoft Corp	3.81	-0.25	-6.2
BAANF	55.50	24.81	Tele Baan Co (H)	47.13	3.44	10.3
TRUV	3.19	1.50	Truevision Corp	3.19	-0.00	3.4
VSIO	50.50	22.88	Visio Corp (H)	47.72	1.72	3.7
WALK	38.44	11.50	Walker Interactive Systems	19.31	0.48	-2.5
WALL	29.13	11.31	Wall Data Inc.	15.13	0.25	5.7
WANG	52.25	16.80	Wang Laboratories Inc	27.44	0.56	2.1
AMZN	100.00	15.75	Amazon.com	82.31	12.50	11.2
AOL	75.63	29.00	America On Line (H)	73.13	-0.63	-0.8
ATHM	50.38	16.63	At Home Corp (H)	33.88	-2.75	7.7
EDFY	25.13	9.11	Edify Corp .	11.30	0.50	4.3
XCYT	30.31	7.63	Excite Inc	61.78	10.47	21.0
SEEK	45.00	4.50	Infoseek Corp	29.81	-6.69	18.3
LCOS	75.13	11.19	Lycos Inc	54.44	15.11	39.7
NSCP	48.50	34.88	Netscape Comm Corp	29.00	1.38	5.0
NSOL	50.00	11.75	Netvision Solution Inc	44.88	0.00	0.0
OMKT	29.13	6.50	Open Market Inc.	19.38	4.63	31.9
PEGS	31.00	12.50	Pegasus Systems (H)	24.38	3.63	13.1
PSIX	15.25	4.25	PSINet (H)	13.69	0.19	1.4
QDEK	3.50	1.10	Quarterdeck Corp	1.87	0.56	40.0
SCUR	15.25	3.50	Secure Computing Corp	11.08	2.38	17.7
SPYG	15.50	4.00	Spyglass Inc	00.75	1.50	52.2
YHOO	129.63	18.44	Yahoo! Inc	113.00	-0.63	7.3
AMD	40.75	17.13	Advanced Micro Devices	28.94	2.69	10.2
ADI	00.31	22.75	Analog Devices Inc (H)	37.69	1.19	3.3
CRUS	17.75	5.00	Cirrus Logic	11.00	1.00	9.6
CY	18.94	7.38	Cypress Semiconductor Corp	10.06	0.44	4.5
INTC	102.00	67.38	Intel Corp	81.63	8.44	9.6
LSCC	24.38	19.75	Lattice Semiconductor	48.38	0.75	1.6
LSI	48.88	18.63	LSI Logic Corp	28.13	2.25	8.7
MCRL	46.88	16.13	Micrel Semiconductor Inc	38.88	2.75	7.6
MU	80.06	22.00	Micron Technology	32.75	2.50	9.1
MOT	90.50	52.00	Motorola Inc.	56.63	0.31	0.0
NSM	42.88	19.50	National Semiconductor	22.50	-0.44	5.6
RMBS	86.75	26.88	Rambus Inc	42.00	1.19	2.7
TXN	91.25	59.63	Texas Instruments	62.50	4.44	7.6
VLSI	38.69	17.00	VLSI Technology	19.88	0.44	2.3
XLNX	58.50	38.50	Xilinx	46.50	4.44	10.5
ADPT	54.25	16.88	Adaptec Inc	22.44	2.50	12.5
APCC	34.38	19.25	American Power Conversion	33.50	-0.25	-0.9
ANDA	3.81	0.94	Andataco Inc	2.88	0.31	15.2
CREAF	29.38	13.13	Creative Technology Ltd.	00.75	1.53	6.9
BRCE	10.75	1.69	Data Race Inc	1.56	-0.22	12.5
DTM	13.13	7.00	Dataram Corp	11.94	0.19	1.6
EMC	45.13	16.50	EMC Corp (H)	45.00	6.29	17.0
EMLX	21.25	7.75	Emulex Corp (L)	7.88	0.50	4.3
ESCC	55.00	22.13	Evans and Sutherland	00.00	0.13	0.4
EXBT	16.50	5.63	Exabyte	11.50	-0.00	-0.5
ISLF	1.00	0.88	Intelligent Info. Systems	1.00	0.31	40.0
ICOM	16.75	6.51	Ipsilon Corp	8.56	1.56	22.2
KMAG	35.50	11.75	Komag Inc.	15.31	0.50	2.5
MTSI	34.63	13.00	Micro Touch Systems Inc	20.19	0.25	1.3
MTIC	17.00	4.00	MTI Technology Corp	13.00	-0.19	1.2
AQM	23.00	2.25	QMS Inc	4.63	0.13	2.8
QNTM	43.25	12.75	Quantum Corp	30.69	0.63	2.0
RDUS	8.31	1.88	Radius Inc	4.88	0.06	1.4
SEG	34.25	17.75	Seagate Technology	27.56	0.38	1.4
SDS	10.38	3.00	Storage Computer Corp	6.25	0.00	0.0
STK	00.25	31.25	Storage Technologies (H)	82.75	2.81	3.5
TEK	48.16	33.94	Tektronix Inc	41.94	-0.31	-0.7
WDC	34.75	14.38	Western Digital Corp	21.19	2.44	13.0
XRX	114.38	50.13	Xerox Corp	110.48	2.75	2.6
AMSY	30.00	17.63	American Mgmt Systems	28.25	-0.25	-0.9
ANLY	36.50	16.13	Analysts Int .	28.88	-0.81	-1.3
AUD	30.69	26.50	Auto Data Processing	66.13	-0.00	-0.8
CATP	57.50	22.00	Cambridge Tech Partners (H)	54.06	0.75	1.4
CEN	50.88	29.88	Cendian Corp (H)	57.38	0.25	0.4
CDO	40.56	19.50	Condisco Inc. (H)	43.16	-0.10	-0.4
CPU	50.00	16.25	CompUSA Inc.	30.19	1.13	3.8
CHRZ	53.38	25.75	Computer Horizons	40.25	-0.19	16.6
CSC	50.75	38.94	Computer Sciences	32.13	0.25	0.5
TSA	49.38	21.00	Computer Task Group	38.19	1.50	3.5
EGGS	12.75	3.75	Eggshed Discount Software	9.88	0.00	0.0
EDS	50.88	29.50	Electronic Data Systems Corp	40.88	-1.81	-4.2
ICO	39.63	00.00	Inacom Corp	36.88	5.50	19.3
INEL	7.53	2.25	Intelligent Electronics (H)	7.47	0.03	0.4
KLA	50.44	00.94	Kamt Inc. (H)	53.50	1.94	3.5
MICA	29.75	10.00	Micronics Int	14.88	-0.13	0.8
PAYX	59.75	27.25	Paychex	54.03	3.53	6.1
PMS	00.69	49.00	Policy Management Sys.	77.19	1.00	1.4
REY	24.00	13.75	Reynolds and Reynolds	23.00	-0.13	-0.5
SCBI	29.38	11.63	SCB Computer Tech Inc.	25.38	1.00	3.8
SEIC	76.00	18.75	SEI Corp	75.00	0.75	1.0
SMIS	52.69	18.50	Shared Medical Systems	70.88	-3.44	10.8
SSPE	24.25	10.00	Software Spectrum Inc	18.00	0.00	14.3
SDS	50.00	20.75	Sungard Data Systems	38.44	1.81	4.7
VST	17.25	6.75	VanStar Corp	12.30	0.31	2.6

KEY (H) = New annual high reached in period (L) = New annual low reached in period

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Be careful what you say on Y2K surveys

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but legal experts said project managers could plant legal time bombs if they don't take extra care in how they fill out the surveys.

"There will be litigation," said Claudia Rast, an attorney who heads the information technology law task force at Dickinson Wright PLLC in Detroit. "And anything you say may and will be used against you."

For starters, lawyers across the country are warning against making any year 2000 compliance guarantees. If systems crash anyway, guarantees could come back to haunt companies in court.

LOSE/LOSE

Legally, companies are damned if they do and damned if they don't, said Gerald Jenkins, a partner at Goldberg, Kohn, Bell, Black, Rosenbloom & Moritz Ltd., a Chicago law firm. If they say they will be compliant, that response could be considered a legally binding guarantee. If they say they aren't yet compliant, that could be considered an "anticipatory breach," indicating they intend to leave their business partners in the lurch in 2000. If so, the partners could sue today rather than wait.

MOREONLINE

Links to vendor compliance, contract language and articles on year 2000 compliance can be found at www.computerworld.com/links in the compliance section of "More year 2000 resources."

The main thing to keep in mind is: Don't guarantee anything, said Chas Snyder, director of year 2000 at Levi Strauss & Co. in San Francisco. "There's a big difference between guaranteeing something and saying, 'To the best of my knowledge' or 'It is our intention,' " he said.

But don't sour a business relationship with unrelenting legalese. "If a company buys 80% of your product, maybe you should handle it carefully," Jenkins said. "Sometimes, the business relationship is more important than the legal relationship."

Before year 2000 project managers dig in to the fine points of law and business, they need to get control of the surveys flooding in to their companies, because the volume is rising daily. "The number of inquiries in March '98 alone exceeded the number of inquiries in all of 1997," said Irene Dec, year 2000 program director at Prudential Insurance Company of America in Newark, N.J.

Brian Murphy, year 2000 project leader at Canadian Tire Corp. in Toronto, so far has responded to several hundred inquiries and suspects that is just the beginning. "It started as a trickle late last year, but now it's becoming a hassle," said Vincent Cafarelli, director of IT at Converse, Inc. in North Reading, Mass.

SURVEY INQUISITION

The surveys can range in format from four or five general questions to an inquisition.

"The most extensive took about an hour to an hour-and-a-half," Grummer said. "Others generally take from five to 15 minutes each."

But as the volume increases, even five to 15 minutes spent on each survey is a drain on limited year 2000 resources. "You begin to roll your eyes at the seventh or eighth one," Cafarelli said.

Still, what goes around comes around. Year 2000 project managers don't complain too much because most of them have sent similar surveys to their own suppliers.

"If you have a need for information about what your business partners are doing, they have the same need as you do," Murphy said.

Robert Neubecker

Experts said the way to handle the administrative nightmare is to establish standard processes for coping with the flood of year 2000 surveys before it becomes a tidal wave (see story at left).

The first step is to round up all year 2000 correspondence. That may be harder than it sounds because suppliers and customers generally send the surveys to their contact at the company, and that can be anyone from a telemarketer to a warehouse manager.

The danger is that an unauthorized person might respond in an unacceptable way.

Next, the IS department must figure out what has already been said to whom and correct it as needed. Then a system must be developed to capture inquiries, catalog them and respond appropriately.

Project managers have been coming up with interesting wrinkles within those systems. Many, including Cafarelli and Grummer, are beginning to substitute well-crafted form letters for completed surveys, at least for non-mission-critical business partners.

Murphy has set up a password-protected World Wide Web site where business partners who complete his year 2000 survey can have access to the same information from Canadian Tire. "We're trying to reinforce the partnership aspect," he said.

"And we feel that putting this process in place will limit the number of inquiries down the road."

The partnership aspect isn't just lip service. Despite the legal minefield, most project managers seem to be approaching the survey problem without antagonism.

"It's not a we/they-type mentality," Snyder said. "Lawyers fan the flames, but this is a supply-chain problem. It's in all our interests to work together." □

Prudential corrals surveys

Getting organized early and well can take a lot of the hassle out of responding to year 2000 inquiries.

Take Prudential Insurance. Last summer, Irene Dec, Prudential's year 2000 program director, created a process to deal with year 2000 surveys and letters that were beginning to trickle in. So far, the process has handled more than 500 surveys and letters.

Dec began by defining an inquiry as anything from a handwritten letter to a detailed institutional poll. She developed standard responses for retail customers, institutional customers and business partners. Having received inquiries from four state insurance regulators, she drafted a detailed report that was sent pre-emptively to every regulator in every state.

Dec also created a database to track when inquiries arrive, who receives them, who responds and when. She appointed a "year 2000 stakeholder" in each line of business. That person is responsible for obtaining and logging the inquiries and responding with the appropriate standard letter, which takes the burden off the year 2000 office.

"The person handles it for the business group but functions under the standard process," she said. "As a result of the process, it's not as time consuming."

In fact, assuming a very conservative 10 minutes per survey response, Dec's process has already saved the year 2000 project staff more than two weeks of effort.

"Irene Dec has come up with an excellent, well-managed solution," said William Ulrich, year 2000 consultant and president of Tactical Strategy Group, Inc. in Soquel, Calif. "I'm impressed."

Dec said the process guarantees a single, cohesive corporate message about year 2000 status and presents her with a snapshot of progress at any given moment. "I can tell you how many inquiries we've responded to as of yesterday," she said.

— Kathleen Melymuka

Judge: AOL not responsible in defamation suit

By Stewart Deck

A JUDGE RULED last week that America Online, Inc. isn't like a traditional publisher — and therefore is immune from a defamation lawsuit filed against one of its content providers.

Under the Communications Decency Act of 1996, service providers aren't the same as traditional publishers because they function as information conduits, rather than publishers, said U.S. District Judge Paul Friedman.

The ruling came in a case that pitted a White House advisor against Matt Drudge, a self-proclaimed gossip columnist on the World Wide Web.

In his "Drudge Report," Drudge claimed that Sidney Blumenthal, a journalist who last year went to work for the Clinton administration, allegedly had "a spousal abuse past." Drudge retracted the story as erroneous the day after it appeared.

Blumenthal filed a $30 million defamation lawsuit claiming that Drudge had acted wrecklessly and asserting that America Online, based in Reston, Va., should be held responsible for the accuracy of material carried on its online service.

The Communications Decency Act protects AOL, the judge said. "In recognition of the speed with which information may be disseminated and the near impossibility of regulating information content, Congress decided not to treat providers of interactive computer services like other information providers," Friedman wrote.

Other media, including newspapers, magazines, television and radio stations, can be held liable for publishing or distributing obscene or defamatory material written or prepared by others.

An attorney for Blumenthal issued a statement saying he would appeal the ruling.

The case against Drudge is still pending in a separate court hearing. □

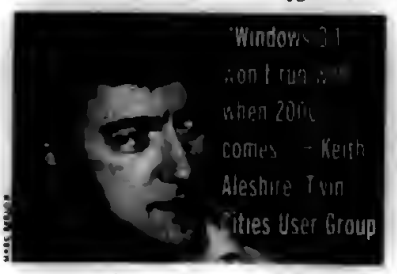
DATAQUEST SURVEY

Win 98 may see wide rollout despite shrugs

By April Jacobs
CHICAGO

WINDOWS 98 GOT a lukewarm reception from many corporate PC managers after its public debut at Comdex/Spring '98 last week. But Dataquest predicts that a surprising number of corporate users will get the new PC operating system anyway.

Figures from Dataquest, to be released in about two weeks, predict that 29.1 million units of Microsoft Corp.'s Windows 98 will be shipped to corporate users between June 25 and year's end.



The estimate suggests that Windows 98 isn't just a consumer product. It even outpaces the business-targeted Windows NT Workstation operating system, of which 22.7 million units are expected to ship during the same period, according to Dataquest.

"Whether or not Microsoft is pushing it [to the corporate market], there will still be a huge number of [corporate] people using it," said Dataquest analyst Chris Le Tocq in San Jose, Calif.

Le Tocq said there are several reasons for Windows 98's better-than-expected showing in the corporate forecast.

A big factor is that PCs shipping in the second half of this year will come loaded with Windows 98, not Windows 95. And users who are concerned about year 2000 glitches with their Windows 3.x machines will move to Windows 98 to avoid problems, figuring they can't wait for NT 5.0. There were 82.5 million corporate users of Windows 3.x at the end of 1997.

"Windows 3.1 won't run well when 2000 comes, so many people are going to be forced to move on before then, even if they aren't ready to take on NT," said Keith Aleshire, president of the Twin Cities PC User Group in Minneapolis. Users want to avoid the headaches of supporting a mixed 16- and 32-bit environment. But some don't have hardware robust enough to support Windows NT, so they will upgrade Windows 3.x machines to 32-bit Windows 98.

"There are no new tools from Microsoft that help you deploy an application when you have mixed environments. But if you have all 32-bit [systems] to develop for, you can be reasonably sure it's going to work on Windows 98 and NT," Le Tocq said.

Le Tocq said the number of users moving from Windows 95 to Windows 98 will be low because Windows 95 users see little benefit in that upgrade.

Several corporate users interviewed at Comdex/Spring '98 said the features added in Windows 98, such as integration with Internet Explorer and support for multiple monitors and Universal Serial Bus, aren't enough to make the switch.

"Windows 98 is a consumer operating system from our point of view. You can take Windows 95, add Internet Explorer and get most of Windows 98," said Michael Wolfe, an analyst at Chevron Information Technology Co. in San Ramon, Calif. □

— Sharon Gaudin contributed to this report.

Stripped-down Hydra to hit streets

CONTINUED FROM PAGE 1

poned features include basics such as load balancing, local file and print sharing, disk drive sharing and serial port mapping and usage.

WTS is a version of Microsoft's Windows NT Server that was designed to support thin clients. It is one of Microsoft's frontal attacks on the growing network computer trend that threatens to steal Windows-based desktops and deliver them to a Java-based environment.

All of the scaled-back features are slated to be added to Hydra next year and will be shipped the same time as NT 5.0. No specific release date has been set. Hydra, which previously didn't have a release date, now is expected to ship by midyear.

That puts Hydra, or WTS, behind some of its competitors that already are on the market. Citrix Systems, Inc. and Tektronix, Inc. currently have offerings with the features that Microsoft put on the back burner.

Users and industry watchers were disappointed with the news, saying the inability to simply print documents and use peripherals such as scanners and Iomega Corp. Zip drives is a major drawback.

– Caterpillar's Paul McCarron: "When we've already purchased the license, we don't want to hear about concessions"

"When we've already purchased the license, we don't want to hear about concessions," said Paul McCarron, a systems integrator at Caterpillar, Inc. in Peoria, Ill.

Microsoft's John Frederiksen, group product manager for WTS, said users want Windows NT-based technology and are willing to take a temporary feature scale-back to get the technology faster.

Willie Lee, a senior analyst at Houston-based Chevron Information Technology Co., agreed. He said concessions are fine if it means he can finally get his hands on the product. "We just want it out the door," said Lee, who has been beta-testing the product. "I can wait for those features until the second version comes out. We've been waiting since last year."

Frederiksen also pointed out that users will be able to get additional functionality with Citrix's MetaFrame add-on, which will provide many of the missing features.

But users still will have to buy both WTS and MetaFrame to make that happen. □

HP tools deploy 'net apps on Unix or NT

By Jaikumar Vijayan

HEWLETT-PACKARD CO. last week announced tools and middleware to help users develop Internet applications on a Windows NT platform and deploy them on Unix or Windows NT systems.

That is good news for Unix/NT shops that are starting to use Windows NT as their primary environment for application development. The Internet applications could be electronic commerce or supply chain management, for example.

"What they are offering somewhat mitigates the risk of going totally with NT or sticking totally with Unix," said Allen Bonde, a consultant at Extraprise Group in Boston. "This way you can develop with NT and still stick with Unix."

The announcement is consistent with HP's long-term effort to converge Unix and NT on the Merced platform, said David Krauthamer, director of information technology at Advanced Fibre Communications, a Petaluma, Calif., manufacturer of telecommunication equipment.

Merced, a chip being co-developed by HP and Intel Corp., promises to run Unix and NT equally well. Other vendors, such as Sun Microsystems, Inc. and IBM, offer tools for developing and deploying Internet applications. "But HP can legitimately claim to be one of the few offering it for both Unix and NT," Bonde said.

HP's Foundation Tools suite gives developers the choice of creating applications in C, C++ or Java on Windows NT systems. Then the applications can be compiled to run on Unix.

HP's FoundationWare is middleware for deploying the applications in mixed environments.

Pricing for HP Foundation Tools starts at $95. FoundationWare will be bundled free with upcoming versions of HP-UX. Both are expected to be available in the fall. □

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Dispatches & images from the fringes of the electronic frontier

Swatch to talk

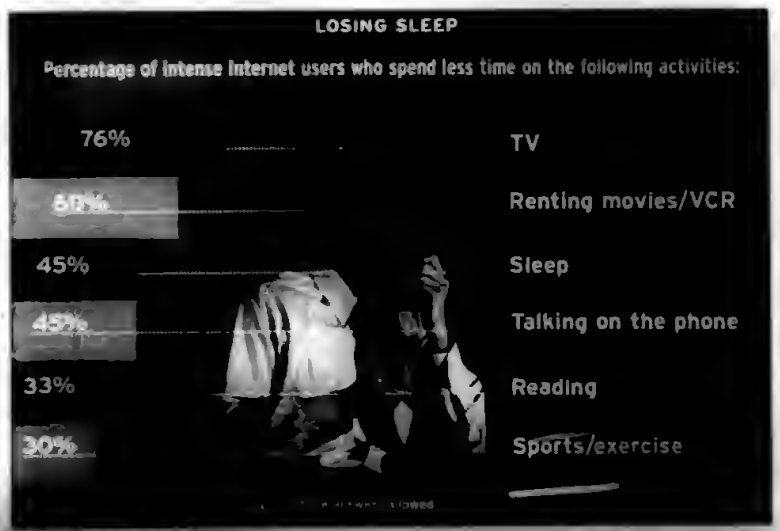
Swatch Telecom in Biel, Switzerland has developed a wristwatch and cordless telephone rolled into one. The user pushes tiny buttons around the Swatch Talk to dial a number and speaks into the hidden microphone. The sound comes out of a built-in speaker, so the conversation is far from private. The Swatch Talk, which weighs 56 grams, will be priced at $250 to $360 and generally available next year. It must be used with a cordless telephone base station, but the company plans to produce a cellular version in about two years, says Tomas Vucurevic, Swatch Telecom's international marketing director.

THE RUGGEDIZED MOUSE PAD

Tired of floppy, fraying, ragged mouse pads clogged with – yacch – body oils? The EvarGlide Mousing Surface is a rigid, durable, washable, textured, plastic panel available from Blooming Tree Productions in Cedar Rapids, Iowa, (*www.averglide.com*) for $12.95 to $14.95. More than 140,000 have been sold.

The end of the Internet as we know it

A search of the far reaches of cyberspace found an extremely obscure Web page in Newfoundland that reports: "YOU HAVE REACHED THE END OF THE INTERNET. You will have to turn around." The signpost is at *http://opaldata.com/the_end/index.html.*



Inside Lines

New Microsoft allegation

The Justice Department is looking into the possibility that Microsoft tried to persuade Netscape in May 1995 to divvy up the Internet software market, according to a report published Friday. Investigators are examining whether the meeting could be part of broader allegations that Microsoft engages in anticompetitive practices in the PC software market, according to a *Wall Street Journal* report. A Microsoft spokesman denied the new allegation.

A Danish spoof

A convenient way to subscribe to multiple E-mail lists became a major headache for the webmaster of a Danish antiracist magazine recently. Carsten Agger of *Fakkeln*, or *Torch*, said he received a slew of unwanted messages after someone fraudently signed him up for Netscape's In-Box Direct service. Ken Rutsky at Netscape said such incidents are rare and added that a security flaw has subsequently been corrected.

Cisco to enter Layer 3 fray

Cisco Systems confirmed plans to enter the Layer 3 switch market with Catalyst 8500 systems that support high-speed routing. The line includes the five-slot 8510, which has 32 10M/100M bit/sec. ports and up to four Gigabit Ethernet ports. It can handle 6 million packet/sec. The 13-slot 8540 has 128 10M/100M bit/sec. ports and up to 16 Gigabit Ethernet ports. It can handle 24 million packet/sec. Pricing for the Catalyst 8510, which will ship in June, will start at $24,995.

Netscape, Lotus E-mail moves

Sources familiar with the company's plans said Netscape will announce a high-end E-mail server aimed at Internet service providers and large companies at the Electronic Messaging Association conference. Netscape declined to comment on the announcement. Also at the show, which will be this week in Anaheim, Calif., Lotus will launch a plan to lure users of its CC:Mail package to Notes.

If you name it, will they come?

Now that the Commerce Department has reported that IT is a big-time driver of the U.S. economy, everyone wants in. Lower Manhattan has Silicon Alley. Los Angeles recently named a zone called Digital Coast. And Chicago got into the act last week when it breathlessly announced its technology zone: Silicon City. "This marks the first time a real and virtual high-tech district have been formally developed simultaneously," a city press release alleged.

But can you burp the lids?

WebTVs — those set-top boxes that combine TV and Internet access — aren't selling real well in retail stores, resellers of the devices said at last week's Comdex/Spring show. But one reseller said he has found a good sales technique: Tupperware-style parties. With munchies and demo units, Chuck Staruch of Xeni, Ohio, said he has been able to sell about three WebTVs per week.

From Russia: Forget the skills shortage

Multinational firms in Russia say their main concern isn't the IT labor shortage but the huge rate of employee turnover. Of 60 companies with Russian operations polled, 40 doing business in Russia said keeping workers is harder than finding people to do the job. Huge changes in the Russian economy were cited.

If you're on America Online tonight and you come across a 26-year-old newbie called Koko from San Francisco, believe her when she tells you she is a gorilla. Her tutor at the Gorilla Foundation research center will translate questions posed across the Internet using sign language. Koko understands about 2,000 spoken words and has a working vocabulary of 500 signs. News editor Patricia Keefe doesn't know sign language, but she can translate your comments and news tips. Contact her at (508) 820-8183 or send E-mail to patricia_keefe@cw.com

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Dispatches & images from the fringes of the electronic frontier

Swatch Telecom in Biel, Switzerland, has developed a wristwatch and cordless telephone rolled into one. The user pushes tiny buttons around the Swatch Talk to dial a number and speaks into the hidden microphone. The sound comes out of a built-in speaker, so the conversation is far from private. The Swatch Talk, which weighs 56 grams, will be priced at $250 to $360 and generally available next year. It must be used with a cordless telephone base station, but the company plans to produce a cellular version in about two years, says Tomas Vucurevic, Swatch Telecom's international marketing director.

THE RUGGEDIZED MOUSE PAD

Tired of floppy, fraying, ragged mouse pads clogged with – yecch – body oils? The EverGlide Mousing Surface is a rigid, durable, washable, textured, plastic panel available from Blooming Tree Productions in Cedar Rapids, Iowa, (*www.everglide.com*) for $12.95 to $14.95. More than 140,000 have been sold.

The end of the Internet as we know it

A search of the far reaches of cyberspace found an extremely obscure Web page in Newfoundland that reports: "YOU HAVE REACHED THE END OF THE INTERNET. You will have to turn around." The signpost is at *http://opaldata.com/the_end/index.html.*

Inside Lines

New Microsoft allegation

The Justice Department is looking into the possibility that Microsoft tried to persuade Netscape in May 1995 to divvy up the Internet software market, according to a report published Friday. Investigators are examining whether the meeting could be part of broader allegations that Microsoft engages in anticompetitive practices in the PC software market, according to a Wall Street Journal report. A Microsoft spokesman denied the new allegation.

A Danish spoof

A convenient way to subscribe to multiple E-mail lists became a major headache for the webmaster of a Danish antiracist magazine recently. Carsten Agger of Aalden, or Torsh, said he received a slew of unwanted messages after someone fraudulently signed Mussolini up for Netscape's In-Net Direct service. Ken Rutsky at Netscape said such incidents are rare and added that a security flaw has subsequently been corrected.

Cisco to enter Layer 3 fray

Cisco Systems confirmed plans to enter the Layer 3 switch market with Catalyst 8500 systems that support high-speed routing. The line includes the five-slot 8510, which has 32 Gbit/routbit bit/sec. ports and up to four Gigabit Ethernet ports. It can handle 6 million packet/sec. The 13-slot 8540 has 128 Gbit/routbit bit/sec. ports and up to 16 Gigabit Ethernet ports. It can handle 24 million packet/sec. Pricing for the Catalyst 8510, which will ship in June, will start at $24,995.

Netscape, Lotus E-mail moves

Sources familiar with the company's plans said Netscape will announce a high-end E-mail server aimed at Internet service providers and large companies at the Electronic Messaging Association conference. Netscape declined to comment on the announcement. Also at the show, which will be this week in Anaheim, Calif., Lotus will launch a plan to lure users of its CC:Mail package to Notes.

If you name it, will they come?

Now that the Commerce Department has reported that IT is a big-time driver of the U.S. economy, everyone wants in. Lower Manhattan has Silicon Alley. Los Angeles recently named a zone called Digital Coast. And Chicago got into the act last week when it breathlessly announced its technology zone: Silicon City. "This marks the first time a real and virtual high-tech district have been formally developed simultaneously," a city press release alleged.

But can you keep the lids?

WebTVs — those set-top boxes that combine TV and Internet access — aren't selling real well in retail stores, resellers of the devices said at last week's Comdex/Spring show. But one reseller said he has found a good sales technique: Tupperware-style parties. With munchies and demo units, Chuck Starsch of Xenia, Ohio, said he has been able to sell about three WebTVs per week.

From Russia: Forget the skills shortage

Multinational firms in Russia say their main concern isn't the IT labor shortage but the huge rate of employee turnover. Of 60 companies with Russian operations polled, 40 doing business in Russia said keeping workers is harder than finding people to do the job. Huge changes in the Russian economy were cited.

If you're on America Online tonight and you come across a 26-year-old newbie called Koko from San Francisco, believe her when she tells you she is a gorilla. Her tutor at the Gorilla Foundation research center will translate questions posed across the Internet using sign language Koko understands about 2,000 spoken words and has a working vocabulary of 500 signs. News editor Patricia Keefe doesn't know sign language, but she can translate your comments and news tips. Contact her at (508) 820-8183 or send E-mail to patricia_keefe@cw.com.

If so, you should be buying your systems from Micron. We're so popular among the technology savvy set that the readers of *PC Week* just voted Micron #1 in overall customer satisfaction. Four out of five geeks (the fifth just goes off and builds their own) prefer Micron because they recognize Micron's engineering driven, award-winning product focus is unmatched in the PC industry. They also know that Micron™ systems are the most dependable, use the finest quality components and are backed up by our responsive and knowledgeable tech support and sales force – all at prices that you wouldn't expect to find from a top-tier $2 billion direct systems manufacturer.

Micron Millennia Desktops

Millennia 333

$2,099

Millennia 350

$2,299

Millennia 400

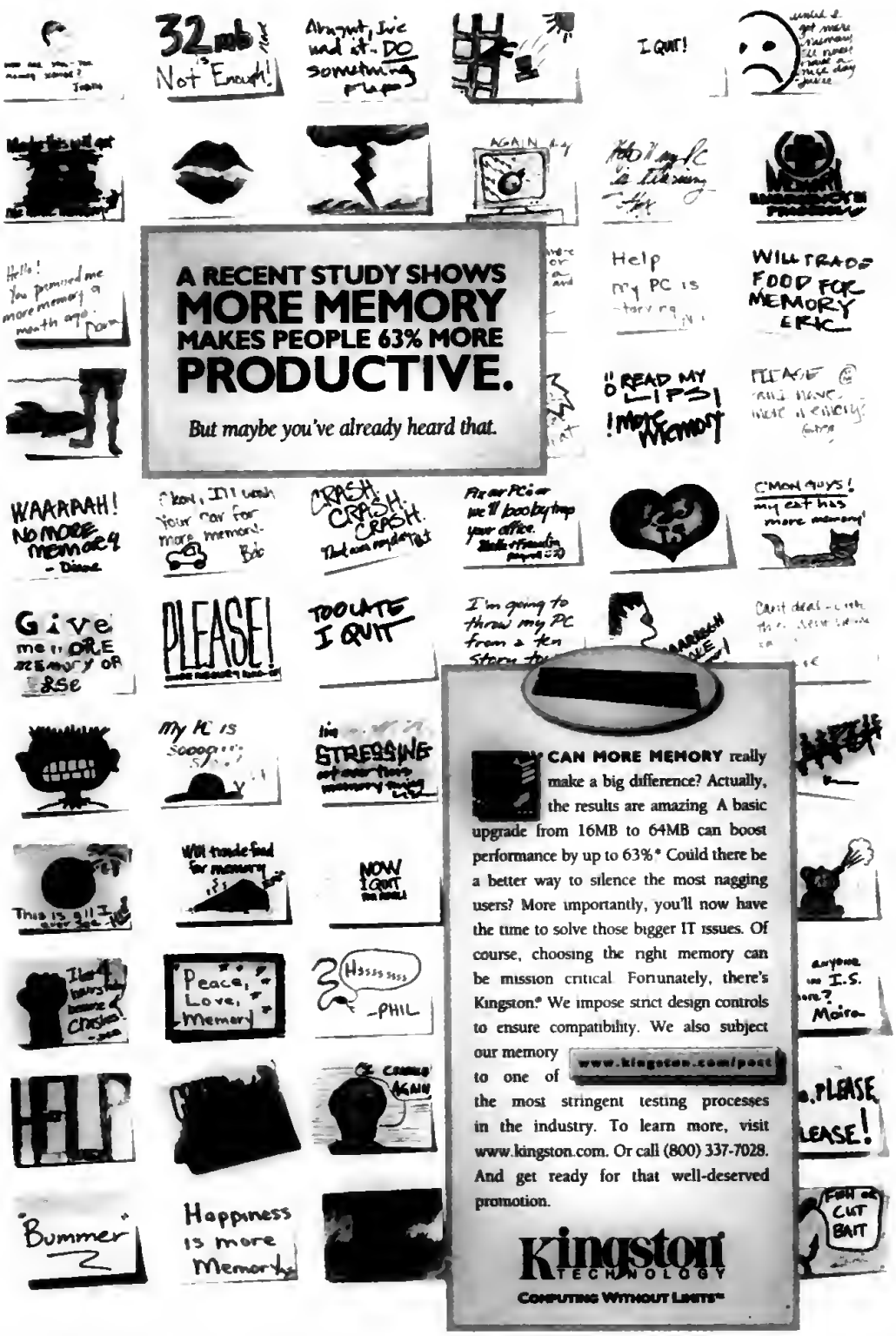
$2,499

intel inside pentium II

boot PC

"Power users will love the new Micron"
-PC

MIC


32MB Not Enough!
I QUIT!
A RECENT STUDY SHOWS
MORE MEMORY
MAKES PEOPLE 63% MORE
PRODUCTIVE.
But maybe you've already heard that.
Help my PC is
WILL TRADE FOOD FOR MEMORY
WAAAAAH! NO MORE MEMORY
- Diane
CRASH. CRASH. CRASH.
Give me MORE MEMORY OR ELSE
PLEASE!
TOO LATE I QUIT
I'm going to throw my PC from a ten
My PC is
STRESSING
Will trade food for memory
NOW I QUIT
Peace, Love, Memory
-PHIL
HELP
Bummer
Happiness is more Memory
CAN MORE MEMORY really make a big difference? Actually, the results are amazing. A basic upgrade from 16MB to 64MB can boost performance by up to 63%.* Could there be a better way to silence the most nagging users? More importantly, you'll now have the time to solve those bigger IT issues. Of course, choosing the right memory can be mission critical. Fortunately, there's Kingston.® We impose strict design controls to ensure compatibility. We also subject our memory to one of the most stringent testing processes in the industry. To learn more, visit www.kingston.com. Or call (800) 337-7028. And get ready for that well-deserved promotion.
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*Upgrade from 16MB to 64MB testing was conducted by an independent service for Samsung Semiconductor, Inc. Kingston Technology Company, 17600 Newhope Street, Fountain Valley, CA 92708 USA, (714) 435-2600, Fax (714) 435-2699. © 1998 Kingston Technology Company. All rights reserved. Computing Without Limits is a trademark of Kingston Technology Company. All other trademarks and registered trademarks are the property of their respective owners.